



SEQUENCE LISTING

<110> Saus, Juan
Revert , Fernando
Revert-Ros, Francisco

<120> Novel Goodpasture antigen-binding protein isoforms and protein misfolded-mediated disorders

<130> 03-075-US

<150> US 60/445,043

<151> 2003-02-05

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<170> PatentIn version 3.1

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Leu	Leu	Pro	Arg	Ser	Ala	Arg	Cys	Gln	Ala	Arg	Arg	Arg	Arg	Gly	Gly					
40			45					50												
cgg	act	tcg	tcc	ctc	ctc	ctg	ctc	ccc	ccc	aca	ccg	gag	cgg	gca	ctc	306				
Arg	Thr	Ser	Ser	Leu	Leu	Leu	Leu	Pro	Pro	Thr	Pro	Glu	Arg	Ala	Leu					
55		60					65													
ttc	gct	tcg	cca	tcc	ccc	gac	cct	tca	ccc	cga	gga	ctg	ggc	gcc	tcc	354				
Phe	Ala	Ser	Pro	Ser	Pro	Asp	Pro	Ser	Pro	Arg	Gly	Leu	Gly	Ala	Ser					
70	75					80					85									
tcc	ggc	gca	gct	gag	gga	gcg	ggg	gcc	ggg	ctc	ctg	ctc	ggg	tgt	cga	402				
Ser	Gly	Ala	Ala	Glu	Gly	Ala	Gly	Ala	Gly	Leu	Leu	Leu	Gly	Cys	Arg					
				90		95					100									
gcc	tcc	atg	tcg	gat	aat	cag	agc	tgg	aac	tcg	tcg	ggc	tcg	gag	gag	450				
Ala	Ser	Met	Ser	Asp	Asn	Gln	Ser	Trp	Asn	Ser	Ser	Gly	Ser	Glu	Glu					
			105		110					115										
gat	cca	gag	acg	gag	tct	ggg	ccg	cct	gtg	gag	cgc	tgc	ggg	gtc	ctc	498				
Asp	Pro	Glu	Thr	Glu	Ser	Gly	Pro	Pro	Val	Glu	Arg	Cys	Gly	Val	Leu					
			120		125					130										
agt	aag	tgg	aca	aac	tac	att	cat	ggg	tgg	cag	gat	cgt	tgg	gta	gtt	546				
Ser	Lys	Trp	Thr	Asn	Tyr	Ile	His	Gly	Trp	Gln	Asp	Arg	Trp	Val	Val					
135		140					145													
ttg	aaa	aat	aat	gct	ctg	agt	tac	tac	aaa	tct	gaa	gat	gaa	aca	gag	594				
Leu	Lys	Asn	Asn	Ala	Leu	Ser	Tyr	Tyr	Lys	Ser	Glu	Asp	Glu	Thr	Glu					
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tat	ggc	tgc	aga	gga	tcc	atc	tgt	ctt	agc	aag	gct	gtc	atc	aca	cct	642				
Tyr	Gly	Cys	Arg	Gly	Ser	Ile	Cys	Leu	Ser	Lys	Ala	Val	Ile	Thr	Pro					
				170		175					180									
cac	gat	ttt	gat	gaa	tgt	cga	ttt	gat	att	agt	gta	aat	gat	agt	gtt	690				
His	Asp	Phe	Asp	Glu	Cys	Arg	Phe	Asp	Ile	Ser	Val	Asn	Asp	Ser	Val					
			185		190					195										
tgg	tat	ctt	cgt	gct	cag	gat	cca	gat	cat	aga	cag	caa	tgg	ata	gat	738				
Trp	Tyr	Leu	Arg	Ala	Gln	Asp	Pro	Asp	His	Arg	Gln	Gln	Trp	Ile	Asp					
200			205					210												
gcc	att	gaa	cag	cac	aag	act	gaa	tct	gga	tat	gga	tct	gaa	tcc	agc	786				
Ala	Ile	Glu	Gln	His	Lys	Thr	Glu	Ser	Gly	Tyr	Gly	Ser	Glu	Ser	Ser					
215		220					225													
ttg	cgt	cga	cat	ggc	tca	atg	gtg	tcc	ctg	gtg	tct	gga	gca	agt	ggc	834				
Leu	Arg	Arg	His	Gly	Ser	Met	Val	Ser	Leu	Val	Ser	Gly	Ala	Ser	Gly					
230	235					240					245									
tac	tct	gca	aca	tcc	acc	tct	tca	ttc	aag	aaa	ggc	cac	agt	tta	cgt	882				
Tyr	Ser	Ala	Thr	Ser	Thr	Ser	Ser	Phe	Lys	Lys	Gly	His	Ser	Leu	Arg					
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gag aag ttg gct gaa atg gaa aca ttt aga gac atc tta tgt aga caa Glu Lys Leu Ala Glu Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln 265 270 275	930
gtt gac acg cta cag aag tac ttt gat gcc tgt gct gat gct gtc tct Val Asp Thr Leu Gln Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser 280 285 290	978
aag gat gaa ctt caa agg gat aaa gtg gta gaa gat gat gaa gat gac Lys Asp Glu Leu Gln Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp 295 300 305	1026
ttt cct aca acg cgt tct gat ggt gac ttc ttg cat agt acc aac ggc Phe Pro Thr Thr Arg Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly 310 315 320 325	1074
aat aaa gaa aag tta ttt cca cat gtg aca cca aaa gga att aat ggt Asn Lys Glu Lys Leu Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly 330 335 340	1122
ata gac ttt aaa ggg gaa gcg ata act ttt aaa gca act act gct gga Ile Asp Phe Lys Gly Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly 345 350 355	1170
atc ctt gca aca ctt tct cat tgt att gaa cta atg gtt aaa cgt gag Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu Met Val Lys Arg Glu 360 365 370	1218
gac agc tgg cag aag aga ctg gat aag gaa act gag aag aaa aga aga Asp Ser Trp Gln Lys Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg 375 380 385	1266
aca gag gaa gca tat aaa aat gca atg aca gaa ctt aag aaa aaa tcc Thr Glu Glu Ala Tyr Lys Asn Ala Met Thr Glu Leu Lys Lys Lys Ser 390 395 400 405	1314
cac ttt gga gga cca gat tat gaa gaa ggc cct aac agt ctg att aat His Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro Asn Ser Leu Ile Asn 410 415 420	1362
gaa gaa gag ttc ttt gat gct gtt gaa gct gct ctt gac aga caa gat Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala Leu Asp Arg Gln Asp 425 430 435	1410
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aca tcc ttg ccc tct gga gat gcc ttt tct tct gtg ggg aca cat aga Thr Ser Leu Pro Ser Gly Asp Ala Phe Ser Ser Val Gly Thr His Arg 455 460 465	1506
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cta gtc agt gcc tct gat gat gtt cac aga ttc agc tcc cag gtt gaa Leu Val Ser Ala Ser Asp Asp Val His Arg Phe Ser Ser Gln Val Glu 490 495 500	1602
gag atg gtg cag aac cac atg act tac tca tta cag gat gta ggc gga Glu Met Val Gln Asn His Met Thr Tyr Ser Leu Gln Asp Val Gly Gly 505 510 515	1650
gat gcc aat tgg cag ttg gtt gta gaa gaa gga gaa atg aag gta tac Asp Ala Asn Trp Gln Leu Val Val Glu Glu Gly Glu Met Lys Val Tyr 520 525 530	1698
aga aga gaa gta gaa gaa aat ggg att gtt ctg gat cct tta aaa gct Arg Arg Glu Val Glu Glu Asn Gly Ile Val Leu Asp Pro Leu Lys Ala 535 540 545	1746
acc cat gca gtt aaa ggc gtc aca gga cat gaa gtc tgc aat tat ttc Thr His Ala Val Lys Gly Val Thr Gly His Glu Val Cys Asn Tyr Phe 550 555 560 565	1794
tgg aat gtt gac gtt cgc aat gac tgg gaa aca act ata gaa aac ttt Trp Asn Val Asp Val Arg Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe 570 575 580	1842
cat gtg gtg gaa aca tta gct gat aat gca atc atc att tat caa aca His Val Val Glu Thr Leu Ala Asp Asn Ala Ile Ile Ile Tyr Gln Thr 585 590 595	1890
cac aag agg gtg tgg cct gct tct cag cga gac gta tta tat ctt tct His Lys Arg Val Trp Pro Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser 600 605 610	1938
gtc att cga aag ata cca gcc ttg act gaa aat gac cct gaa act tgg Val Ile Arg Lys Ile Pro Ala Leu Thr Glu Asn Asp Pro Glu Thr Trp 615 620 625	1986
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cga tgt gtc cgt gcc aaa ata aat gtt gct atg att tgt caa acc ttg Arg Cys Val Arg Ala Lys Ile Asn Val Ala Met Ile Cys Gln Thr Leu 650 655 660	2082
gta agc cca cca gag gga aac cag gaa att agc agg gac aac att cta Val Ser Pro Pro Glu Gly Asn Gln Glu Ile Ser Arg Asp Asn Ile Leu 665 670 675	2130
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gcc tca gtg tta agg gca gtg gca aag cga gag tat cct aaa ttt cta Ala Ser Val Leu Arg Ala Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu 695 700 705	2226
aaa cgt ttt act tct tac gtc caa gaa aaa act gca gga aag cct att	2274

Lys Arg Phe Thr Ser Tyr Val Gln Glu Lys Thr Ala Gly Lys Pro Ile
710 715 720 725

ttg ttc tag tattaacagg tactagaaga tatgttttat ctttttttaa 2323
Leu Phe

ctttatttga ctaatatgac tgtcaataact aaaatttagt tggtgaaagt atttactatg 2383

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35 40 45

Arg Arg Arg Gly Gly Arg Thr Ser Ser Leu Leu Leu Leu Pro Pro Thr
50 55 60

Pro Glu Arg Ala Leu Phe Ala Ser Pro Ser Pro Asp Pro Ser Pro Arg
65 70 75 80

Gly Leu Gly Ala Ser Ser Gly Ala Ala Glu Gly Ala Gly Ala Gly Leu
85 90 95

Leu Leu Gly Cys Arg Ala Ser Met Ser Asp Asn Gln Ser Trp Asn Ser
100 105 110

Ser Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly Pro Pro Val Glu
115 120 125

Arg Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile His Gly Trp Gln
130 135 140

Asp Arg Trp Val Val Leu Lys Asn Asn Ala Leu Ser Tyr Tyr Lys Ser
145 150 155 160

Glu Asp Glu Thr Glu Tyr Gly Cys Arg Gly Ser Ile Cys Leu Ser Lys
165 170 175

Ala Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg Phe Asp Ile Ser
180 185 190

Val Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp Pro Asp His Arg
195 200 205

Gln Gln Trp Ile Asp Ala Ile Glu Gln His Lys Thr Glu Ser Gly Tyr
210 215 220

Gly Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met Val Ser Leu Val
225 230 235 240

Ser Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser Ser Phe Lys Lys
245 250 255

Gly His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu Thr Phe Arg Asp
260 265 270

Ile Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Tyr Phe Asp Ala Cys
275 280 285

Ala Asp Ala Val Ser Lys Asp Glu Leu Gln Arg Asp Lys Val Val Glu
290 295 300

Asp Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp Gly Asp Phe Leu
305 310 315 320

His Ser Thr Asn Gly Asn Lys Glu Lys Leu Phe Pro His Val Thr Pro
325 330 335

Lys Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala Ile Thr Phe Lys
340 345 350

Ala Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu
355 360 365

Met Val Lys Arg Glu Asp Ser Trp Gln Lys Arg Leu Asp Lys Glu Thr
370 375 380

Glu Lys Lys Arg Arg Thr Glu Glu Ala Tyr Lys Asn Ala Met Thr Glu
385 390 395 400

Leu Lys Lys Lys Ser His Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro
405 410 415

Asn Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala
420 425 430

Leu Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val
435 440 445

Arg Leu His Trp Pro Thr Ser Leu Pro Ser Gly Asp Ala Phe Ser Ser
450 455 460

Val Gly Thr His Arg Phe Val Gln Lys Pro Tyr Ser Arg Ser Ser Ser
465 470 475 480

Met Ser Ser Ile Asp Leu Val Ser Ala Ser Asp Asp Val His Arg Phe
485 490 495

Ser Ser Gln Val Glu Glu Met Val Gln Asn His Met Thr Tyr Ser Leu
500 505 510

Gln Asp Val Gly Gly Asp Ala Asn Trp Gln Leu Val Val Glu Glu Gly
515 520 525

Glu Met Lys Val Tyr Arg Arg Glu Val Glu Glu Asn Gly Ile Val Leu
530 535 540

Asp Pro Leu Lys Ala Thr His Ala Val Lys Gly Val Thr Gly His Glu
545 550 555 560

Val Cys Asn Tyr Phe Trp Asn Val Asp Val Arg Asn Asp Trp Glu Thr
565 570 575

Thr Ile Glu Asn Phe His Val Val Glu Thr Leu Ala Asp Asn Ala Ile
580 585 590

Ile Ile Tyr Gln Thr His Lys Arg Val Trp Pro Ala Ser Gln Arg Asp
595 600 605

Val Leu Tyr Leu Ser Val Ile Arg Lys Ile Pro Ala Leu Thr Glu Asn
610 615 620

Asp Pro Glu Thr Trp Ile Val Cys Asn Phe Ser Val Asp His Asp Ser
625 630 635 640

Ala Pro Leu Asn Asn Arg Cys Val Arg Ala Lys Ile Asn Val Ala Met
645 650 655

Ile Cys Gln Thr Leu Val Ser Pro Pro Glu Gly Asn Gln Glu Ile Ser
660 665 670

Arg Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val Ala Asn Val Asn Pro
675 680 685

Gly Gly Trp Ala Pro Ala Ser Val Leu Arg Ala Val Ala Lys Arg Glu
690 695 700

Tyr Pro Lys Phe Leu Lys Arg Phe Thr Ser Tyr Val Gln Glu Lys Thr
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Ala Gly Lys Pro Ile Leu Phe
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Leu Ala Ser Arg Gly
1 5

cta agt tcg ggt ggc agc gcc ggg cgc aac gca ggg gtc acg gcg acg 162
Leu Ser Ser Gly Gly Ser Ala Gly Arg Asn Ala Gly Val Thr Ala Thr
10 15 20

gcg gcg gcg gct gac ggc tgg aag ggt agg ctt cct tca ccg ctc gtc 210
Ala Ala Ala Ala Asp Gly Trp Lys Gly Arg Leu Pro Ser Pro Leu Val
25 30 35

ctc ctt cct cgc tcc gct cgg tgt cag gcg cgg cgg cgg cgc ggc ggg Leu Leu Pro Arg Ser Ala Arg Cys Gln Ala Arg Arg Arg Arg Gly Gly 40 45 50	258
cgg act tcg tcc ctc ctc ctg ctc ccc ccc aca ccg gag cgg gca ctc Arg Thr Ser Ser Leu Leu Leu Leu Pro Pro Thr Pro Glu Arg Ala Leu 55 60 65	306
ttc gct tcg cca tcc ccc gac cct tca ccc cga gga ctg ggc gcc tcc Phe Ala Ser Pro Ser Pro Asp Pro Ser Pro Arg Gly Leu Gly Ala Ser 70 75 80 85	354
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gat cca gag acg gag tct ggg ccg cct gtg gag cgc tgc ggg gtc ctc Asp Pro Glu Thr Glu Ser Gly Pro Pro Val Glu Arg Cys Gly Val Leu 120 125 130	498
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cac gat ttt gat gaa tgt cga ttt gat att agt gta aat gat agt gtt His Asp Phe Asp Glu Cys Arg Phe Asp Ile Ser Val Asn Asp Ser Val 185 190 195	690
tgg tat ctt cgt gct cag gat cca gat cat aga cag caa tgg ata gat Trp Tyr Leu Arg Ala Gln Asp Pro Asp His Arg Gln Gln Trp Ile Asp 200 205 210	738
gcc att gaa cag cac aag act gaa tct gga tat gga tct gaa tcc agc Ala Ile Glu Gln His Lys Thr Glu Ser Gly Tyr Gly Ser Glu Ser Ser 215 220 225	786
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Glu Lys Leu Ala Glu Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln	
265 270 275	
gtt gac acg cta cag aag tac ttt gat gcc tgt gct gat gct gtc tct	978
Val Asp Thr Leu Gln Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser	
280 285 290	
aag gat gaa ctt caa agg gat aaa gtg gta gaa gat gat gaa gat gac	1026
Lys Asp Glu Leu Gln Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp	
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Phe Pro Thr Thr Arg Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly	
310 315 320 325	
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Asn Lys Glu Lys Leu Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly	
330 335 340	
ata gac ttt aaa ggg gaa gcg ata act ttt aaa gca act act gct gga	1170
Ile Asp Phe Lys Gly Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly	
345 350 355	
atc ctt gca aca ctt tct cat tgt att gaa cta atg gtt aaa cgt gag	1218
Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu Met Val Lys Arg Glu	
360 365 370	
gac agc tgg cag aag aga ctg gat aag gaa act gag aag aaa aga aga	1266
Asp Ser Trp Gln Lys Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg	
375 380 385	
aca gag gaa gca tat aaa aat gca atg aca gaa ctt aag aaa aaa tcc	1314
Thr Glu Glu Ala Tyr Lys Asn Ala Met Thr Glu Leu Lys Lys Lys Ser	
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cac ttt gga gga cca gat tat gaa gaa ggc cct aac agt ctg att aat	1362
His Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro Asn Ser Leu Ile Asn	
410 415 420	
gaa gaa gag ttc ttt gat gct gtt gaa gct gct ctt gac aga caa gat	1410
Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala Leu Asp Arg Gln Asp	
425 430 435	
aaa ata gaa gaa cag tca cag agt gaa aag gtg aga tta cat tgg cct	1458
Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val Arg Leu His Trp Pro	
440 445 450	
aca tcc ttg ccc tct gga gat gcc ttt tct tct gtg ggg aca cat aga	1506
Thr Ser Leu Pro Ser Gly Asp Ala Phe Ser Ser Val Gly Thr His Arg	
455 460 465	
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Phe Val Gln Lys Val Glu Glu Met Val Gln Asn His Met Thr Tyr Ser	
470 475 480 485	
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Leu Gln Asp Val Gly Gly Asp Ala Asn Trp Gln Leu Val Val Glu Glu	

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ctg gat cct tta aaa gct acc cat gca gtt aaa ggc gtc aca gga cat Leu Asp Pro Leu Lys Ala Thr His Ala Val Lys Gly Val Thr Gly His 520 525 530			1698
gaa gtc tgc aat tat ttc tgg aat gtt gac gtt cgc aat gac tgg gaa Glu Val Cys Asn Tyr Phe Trp Asn Val Asp Val Arg Asn Asp Trp Glu 535 540 545			1746
aca act ata gaa aac ttt cat gtg gtg gaa aca tta gct gat aat gca Thr Thr Ile Glu Asn Phe His Val Val Glu Thr Leu Ala Asp Asn Ala 550 555 560 565			1794
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agt gct cct cta aac aac cga tgt gtc cgt gcc aaa ata aat gtt gct Ser Ala Pro Leu Asn Asn Arg Cys Val Arg Ala Lys Ile Asn Val Ala 615 620 625			1986
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agc agg gac aac att cta tgc aag att aca tat gta gct aat gtg aac Ser Arg Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val Ala Asn Val Asn 650 655 660			2082
cct gga gga tgg gca cca gcc tca gtg tta agg gca gtg gca aag cga Pro Gly Gly Trp Ala Pro Ala Ser Val Leu Arg Ala Val Ala Lys Arg 665 670 675			2130
gag tat cct aaa ttt cta aaa cgt ttt act tct tac gtc caa gaa aaa Glu Tyr Pro Lys Phe Leu Lys Arg Phe Thr Ser Tyr Val Gln Glu Lys 680 685 690			2178
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<213> Homo sapiens

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Pro Ser Pro Leu Val Leu Leu Pro Arg Ser Ala Arg Cys Gln Ala Arg
35 40 45

Arg Arg Arg Gly Gly Arg Thr Ser Ser Leu Leu Leu Leu Pro Pro Thr
50 55 60

Pro Glu Arg Ala Leu Phe Ala Ser Pro Ser Pro Asp Pro Ser Pro Arg
65 70 75 80

Gly Leu Gly Ala Ser Ser Gly Ala Ala Glu Gly Ala Gly Ala Gly Leu
85 90 95

Leu Leu Gly Cys Arg Ala Ser Met Ser Asp Asn Gln Ser Trp Asn Ser
100 105 110

Ser Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly Pro Pro Val Glu
115 120 125

Arg Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile His Gly Trp Gln
130 135 140

Asp Arg Trp Val Val Leu Lys Asn Asn Ala Leu Ser Tyr Tyr Lys Ser
145 150 155 160

Glu Asp Glu Thr Glu Tyr Gly Cys Arg Gly Ser Ile Cys Leu Ser Lys
165 170 175

Ala Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg Phe Asp Ile Ser
180 185 190

Val Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp Pro Asp His Arg
195 200 205

Gln Gln Trp Ile Asp Ala Ile Glu Gln His Lys Thr Glu Ser Gly Tyr
210 215 220

Gly Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met Val Ser Leu Val
225 230 235 240

Ser Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser Ser Phe Lys Lys
245 250 255

Gly His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu Thr Phe Arg Asp
260 265 270

Ile Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Tyr Phe Asp Ala Cys
275 280 285

Ala Asp Ala Val Ser Lys Asp Glu Leu Gln Arg Asp Lys Val Val Glu
290 295 300

Asp Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp Gly Asp Phe Leu
305 310 315 320

His Ser Thr Asn Gly Asn Lys Glu Lys Leu Phe Pro His Val Thr Pro
325 330 335

Lys Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala Ile Thr Phe Lys
340 345 350

Ala Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu
355 360 365

Met Val Lys Arg Glu Asp Ser Trp Gln Lys Arg Leu Asp Lys Glu Thr
370 375 380

Glu Lys Lys Arg Arg Thr Glu Glu Ala Tyr Lys Asn Ala Met Thr Glu
385 390 395 400

Leu Lys Lys Lys Ser His Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro
405 410 415

Asn Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala

420

425

430

Leu Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val
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Arg Leu His Trp Pro Thr Ser Leu Pro Ser Gly Asp Ala Phe Ser Ser
 450 455 460

Val Gly Thr His Arg Phe Val Gln Lys Val Glu Glu Met Val Gln Asn
 465 470 475 480

His Met Thr Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala Asn Trp Gln
 485 490 495

Leu Val Val Glu Glu Gly Glu Met Lys Val Tyr Arg Arg Glu Val Glu
 500 505 510

Glu Asn Gly Ile Val Leu Asp Pro Leu Lys Ala Thr His Ala Val Lys
 515 520 525

Gly Val Thr Gly His Glu Val Cys Asn Tyr Phe Trp Asn Val Asp Val
 530 535 540

Arg Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe His Val Val Glu Thr
 545 550 555 560

Leu Ala Asp Asn Ala Ile Ile Ile Tyr Gln Thr His Lys Arg Val Trp
 565 570 575

Pro Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser Val Ile Arg Lys Ile
 580 585 590

Pro Ala Leu Thr Glu Asn Asp Pro Glu Thr Trp Ile Val Cys Asn Phe
 595 600 605

Ser Val Asp His Asp Ser Ala Pro Leu Asn Asn Arg Cys Val Arg Ala
 610 615 620

Lys Ile Asn Val Ala Met Ile Cys Gln Thr Leu Val Ser Pro Pro Glu
 625 630 635 640

Gly Asn Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile Thr Tyr
 645 650 655

Val Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val Leu Arg
660 665 670

Ala Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys Arg Phe Thr Ser
675 680 685

Tyr Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe
690 695 700

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<211> 1914
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1 5 10 15
aat cag agc tgg aac tcg tcg ggc tcg gag gag gat cca gag acg gag 96
Asn Gln Ser Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro Glu Thr Glu
20 25 30
tct ggg ccg cct gtg gag cgc tgc ggg gtc ctc agt aag tgg aca aac 144
Ser Gly Pro Pro Val Glu Arg Cys Gly Val Leu Ser Lys Trp Thr Asn
35 40 45
tac att cat ggg tgg cag gat cgt tgg gta gtt ttg aaa aat aat gct 192
Tyr Ile His Gly Trp Gln Asp Arg Trp Val Val Leu Lys Asn Asn Ala
50 55 60
ctg agt tac tac aaa tct gaa gat gaa aca gag tat ggc tgc aga gga 240
Leu Ser Tyr Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly Cys Arg Gly
65 70 75 80
tcc atc tgt ctt agc aag gct gtc atc aca cct cac gat ttt gat gaa 288
Ser Ile Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe Asp Glu
85 90 95
tgt cga ttt gat att agt gta aat gat agt gtt tgg tat ctt cgt gct 336
Cys Arg Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu Arg Ala
100 105 110
cag gat cca gat cat aga cag caa tgg ata gat gcc att gaa cag cac 384

Gln	Asp	Pro	Asp	His	Arg	Gln	Gln	Trp	Ile	Asp	Ala	Ile	Glu	Gln	His		
		115					120					125					
aag	act	gaa	tct	gga	tat	gga	tct	gaa	tcc	agc	ttg	cgt	cga	cat	ggc		432
Lys	Thr	Glu	Ser	Gly	Tyr	Gly	Ser	Glu	Ser	Ser	Leu	Arg	Arg	His	Gly		
		130				135					140						
tca	atg	gtg	tcc	ctg	gtg	tct	gga	gca	agt	ggc	tac	tct	gca	aca	tcc		480
Ser	Met	Val	Ser	Leu	Val	Ser	Gly	Ala	Ser	Gly	Tyr	Ser	Ala	Thr	Ser		
		145			150					155					160		
acc	tct	tca	ttc	aag	aaa	ggc	cac	agt	tta	cgt	gag	aag	ttg	gct	gaa		528
Thr	Ser	Ser	Phe	Lys	Lys	Gly	His	Ser	Leu	Arg	Glu	Lys	Leu	Ala	Glu		
				165					170					175			
atg	gaa	aca	ttt	aga	gac	atc	tta	tgt	aga	caa	gtt	gac	acg	cta	cag		576
Met	Glu	Thr	Phe	Arg	Asp	Ile	Leu	Cys	Arg	Gln	Val	Asp	Thr	Leu	Gln		
			180					185					190				
aag	tac	ttt	gat	gcc	tgt	gct	gat	gct	gtc	tct	aag	gat	gaa	ctt	caa		624
Lys	Tyr	Phe	Asp	Ala	Cys	Ala	Asp	Ala	Val	Ser	Lys	Asp	Glu	Leu	Gln		
		195				200						205					
agg	gat	aaa	gtg	gta	gaa	gat	gat	gaa	gat	gac	ttt	cct	aca	acg	cgt		672
Arg	Asp	Lys	Val	Val	Glu	Asp	Asp	Glu	Asp	Asp	Phe	Pro	Thr	Thr	Arg		
		210				215					220						
tct	gat	ggt	gac	ttc	ttg	cat	agt	acc	aac	ggc	aat	aaa	gaa	aag	tta		720
Ser	Asp	Gly	Asp	Phe	Leu	His	Ser	Thr	Asn	Gly	Asn	Lys	Glu	Lys	Leu		
		225			230					235					240		
ttt	cca	cat	gtg	aca	cca	aaa	gga	att	aat	ggt	ata	gac	ttt	aaa	ggg		768
Phe	Pro	His	Val	Thr	Pro	Lys	Gly	Ile	Asn	Gly	Ile	Asp	Phe	Lys	Gly		
				245				250						255			
gaa	gcg	ata	act	ttt	aaa	gca	act	act	gct	gga	atc	ctt	gca	aca	ctt		816
Glu	Ala	Ile	Thr	Phe	Lys	Ala	Thr	Thr	Ala	Gly	Ile	Leu	Ala	Thr	Leu		
			260					265					270				
tct	cat	tgt	att	gaa	cta	atg	gtt	aaa	cgt	gag	gac	agc	tggt	cag	aag		864
Ser	His	Cys	Ile	Glu	Leu	Met	Val	Lys	Arg	Glu	Asp	Ser	Trp	Gln	Lys		
		275					280					285					
aga	ctg	gat	aag	gaa	act	gag	aag	aaa	aga	aga	aca	gag	gaa	gca	tat		912
Arg	Leu	Asp	Lys	Glu	Thr	Glu	Lys	Lys	Arg	Arg	Thr	Glu	Glu	Ala	Tyr		
		290				295					300						
aaa	aat	gca	atg	aca	gaa	ctt	aag	aaa	aaa	tcc	cac	ttt	gga	gga	cca		960
Lys	Asn	Ala	Met	Thr	Glu	Leu	Lys	Lys	Lys	Ser	His	Phe	Gly	Gly	Pro		
		305			310					315					320		
gat	tat	gaa	gaa	ggc	cct	aac	agt	ctg	att	aat	gaa	gaa	gag	ttc	ttt		1008
Asp	Tyr	Glu	Glu	Gly	Pro	Asn	Ser	Leu	Ile	Asn	Glu	Glu	Glu	Phe	Phe		
				325				330						335			
gat	gct	gtt	gaa	gct	gct	ctt	gac	aga	caa	gat	aaa	ata	gaa	gaa	cag		1056
Asp	Ala	Val	Glu	Ala	Ala	Leu	Asp	Arg	Gln	Asp	Lys	Ile	Glu	Glu	Gln		

340	345	350	
tca cag agt gaa aag gtg aga tta cat tgg cct aca tcc ttg ccc tct Ser Gln Ser Glu Lys Val Arg Leu His Trp Pro Thr Ser Leu Pro Ser 355 360 365			1104
gga gat gcc ttt tct tct gtg ggg aca cat aga ttt gtc caa aag ccc Gly Asp Ala Phe Ser Ser Val Gly Thr His Arg Phe Val Gln Lys Pro 370 375 380			1152
tat agt cgc tct tcc tcc atg tct tcc att gat cta gtc agt gcc tct Tyr Ser Arg Ser Ser Met Ser Ser Ile Asp Leu Val Ser Ala Ser 385 390 395 400			1200
gat gat gtt cac aga ttc agc tcc cag gtt gaa gag atg gtg cag aac Asp Asp Val His Arg Phe Ser Ser Gln Val Glu Glu Met Val Gln Asn 405 410 415			1248
cac atg act tac tca tta cag gat gta ggc gga gat gcc aat tgg cag His Met Thr Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala Asn Trp Gln 420 425 430			1296
ttg gtt gta gaa gaa gga gaa atg aag gta tac aga aga gaa gta gaa Leu Val Val Glu Glu Gly Glu Met Lys Val Tyr Arg Arg Glu Val Glu 435 440 445			1344
gaa aat ggg att gtt ctg gat cct tta aaa gct acc cat gca gtt aaa Glu Asn Gly Ile Val Leu Asp Pro Leu Lys Ala Thr His Ala Val Lys 450 455 460			1392
ggc gtc aca gga cat gaa gtc tgc aat tat ttc tgg aat gtt gac gtt Gly Val Thr Gly His Glu Val Cys Asn Tyr Phe Trp Asn Val Asp Val 465 470 475 480			1440
cgc aat gac tgg gaa aca act ata gaa aac ttt cat gtg gtg gaa aca Arg Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe His Val Val Glu Thr 485 490 495			1488
tta gct gat aat gca atc atc att tat caa aca cac aag agg gtg tgg Leu Ala Asp Asn Ala Ile Ile Ile Tyr Gln Thr His Lys Arg Val Trp 500 505 510			1536
cct gct tct cag cga gac gta tta tat ctt tct gtc att cga aag ata Pro Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser Val Ile Arg Lys Ile 515 520 525			1584
cca gcc ttg act gaa aat gac cct gaa act tgg ata gtt tgt aat ttt Pro Ala Leu Thr Glu Asn Asp Pro Glu Thr Trp Ile Val Cys Asn Phe 530 535 540			1632
tct gtg gat cat gac agt gct cct cta aac aac cga tgt gtc cgt gcc Ser Val Asp His Asp Ser Ala Pro Leu Asn Asn Arg Cys Val Arg Ala 545 550 555 560			1680
aaa ata aat gtt gct atg att tgt caa acc ttg gta agc cca cca gag Lys Ile Asn Val Ala Met Ile Cys Gln Thr Leu Val Ser Pro Pro Glu 565 570 575			1728

gga aac cag gaa att agc agg gac aac att cta tgc aag att aca tat	1776
Gly Asn Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile Thr Tyr	
580 585 590	

gta gct aat gtg aac cct gga gga tgg gca cca gcc tca gtg tta agg	1824
Val Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val Leu Arg	
595 600 605	

gca gtg gca aag cga gag tat cct aaa ttt cta aaa cgt ttt act tct	1872
Ala Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys Arg Phe Thr Ser	
610 615 620	

tac gtc caa gaa aaa act gca gga aag cct att ttg ttc tag	1914
Tyr Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe	
625 630 635	

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Asn Gln Ser Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro Glu Thr Glu
20 25 30

Ser Gly Pro Pro Val Glu Arg Cys Gly Val Leu Ser Lys Trp Thr Asn
35 40 45

Tyr Ile His Gly Trp Gln Asp Arg Trp Val Val Leu Lys Asn Asn Ala
50 55 60

Leu Ser Tyr Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly Cys Arg Gly
65 70 75 80

Ser Ile Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe Asp Glu
85 90 95

Cys Arg Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu Arg Ala
100 105 110

Gln Asp Pro Asp His Arg Gln Gln Trp Ile Asp Ala Ile Glu Gln His

115

120

125

Lys Thr Glu Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg Arg His Gly
130 135 140

Ser Met Val Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser Ala Thr Ser
145 150 155 160

Thr Ser Ser Phe Lys Lys Gly His Ser Leu Arg Glu Lys Leu Ala Glu
165 170 175

Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr Leu Gln
180 185 190

Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser Lys Asp Glu Leu Gln
195 200 205

Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr Thr Arg
210 215 220

Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly Asn Lys Glu Lys Leu
225 230 235 240

Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe Lys Gly
245 250 255

Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala Thr Leu
260 265 270

Ser His Cys Ile Glu Leu Met Val Lys Arg Glu Asp Ser Trp Gln Lys
275 280 285

Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg Thr Glu Glu Ala Tyr
290 295 300

Lys Asn Ala Met Thr Glu Leu Lys Lys Lys Ser His Phe Gly Gly Pro
305 310 315 320

Asp Tyr Glu Glu Gly Pro Asn Ser Leu Ile Asn Glu Glu Glu Phe Phe
325 330 335

Asp Ala Val Glu Ala Ala Leu Asp Arg Gln Asp Lys Ile Glu Glu Gln
340 345 350

Ser Gln Ser Glu Lys Val Arg Leu His Trp Pro Thr Ser Leu Pro Ser
355 360 365

Gly Asp Ala Phe Ser Ser Val Gly Thr His Arg Phe Val Gln Lys Pro
370 375 380

Tyr Ser Arg Ser Ser Ser Met Ser Ser Ile Asp Leu Val Ser Ala Ser
385 390 395 400

Asp Asp Val His Arg Phe Ser Ser Gln Val Glu Glu Met Val Gln Asn
405 410 415

His Met Thr Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala Asn Trp Gln
420 425 430

Leu Val Val Glu Glu Gly Glu Met Lys Val Tyr Arg Arg Glu Val Glu
435 440 445

Glu Asn Gly Ile Val Leu Asp Pro Leu Lys Ala Thr His Ala Val Lys
450 455 460

Gly Val Thr Gly His Glu Val Cys Asn Tyr Phe Trp Asn Val Asp Val
465 470 475 480

Arg Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe His Val Val Glu Thr
485 490 495

Leu Ala Asp Asn Ala Ile Ile Ile Tyr Gln Thr His Lys Arg Val Trp
500 505 510

Pro Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser Val Ile Arg Lys Ile
515 520 525

Pro Ala Leu Thr Glu Asn Asp Pro Glu Thr Trp Ile Val Cys Asn Phe
530 535 540

Ser Val Asp His Asp Ser Ala Pro Leu Asn Asn Arg Cys Val Arg Ala
545 550 555 560

Lys Ile Asn Val Ala Met Ile Cys Gln Thr Leu Val Ser Pro Pro Glu
565 570 575

Gly Asn Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile Thr Tyr
580 585 590

Val Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val Leu Arg
595 600 605

Ala Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys Arg Phe Thr Ser
610 615 620

Tyr Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe
625 630 635

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aat cag agc tgg aac tcg tcg ggc tcg gag gag gat cca gag acg gag	96
Asn Gln Ser Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro Glu Thr Glu	
20 25 30	
tct ggg ccg cct gtg gag cgc tgc ggg gtc ctc agt aag tgg aca aac	144
Ser Gly Pro Pro Val Glu Arg Cys Gly Val Leu Ser Lys Trp Thr Asn	
35 40 45	
tac att cat ggg tgg cag gat cgt tgg gta gtt ttg aaa aat aat gct	192
Tyr Ile His Gly Trp Gln Asp Arg Trp Val Val Leu Lys Asn Asn Ala	
50 55 60	
ctg agt tac tac aaa tct gaa gat gaa aca gag tat ggc tgc aga gga	240
Leu Ser Tyr Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly Cys Arg Gly	
65 70 75 80	
tcc atc tgt ctt agc aag gct gtc atc aca cct cac gat ttt gat gaa	288
Ser Ile Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe Asp Glu	
85 90 95	
tgt cga ttt gat att agt gta aat gat agt gtt tgg tat ctt cgt gct	336
Cys Arg Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu Arg Ala	

100	105	110	
cag gat cca gat cat aga cag caa tgg ata gat gcc att gaa cag cac Gln Asp Pro Asp His Arg Gln Gln Trp Ile Asp Ala Ile Glu Gln His 115 120 125			384
aag act gaa tct gga tat gga tct gaa tcc agc ttg cgt cga cat ggc Lys Thr Glu Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg Arg His Gly 130 135 140			432
tca atg gtg tcc ctg gtg tct gga gca agt ggc tac tct gca aca tcc Ser Met Val Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser Ala Thr Ser 145 150 155 160			480
acc tct tca ttc aag aaa ggc cac agt tta cgt gag aag ttg gct gaa Thr Ser Ser Phe Lys Lys Gly His Ser Leu Arg Glu Lys Leu Ala Glu 165 170 175			528
atg gaa aca ttt aga gac atc tta tgt aga caa gtt gac acg cta cag Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr Leu Gln 180 185 190			576
aag tac ttt gat gcc tgt gct gat gct gtc tct aag gat gaa ctt caa Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser Lys Asp Glu Leu Gln 195 200 205			624
agg gat aaa gtg gta gaa gat gat gaa gat gac ttt cct aca acg cgt Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr Thr Arg 210 215 220			672
tct gat ggt gac ttc ttg cat agt acc aac ggc aat aaa gaa aag tta Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly Asn Lys Glu Lys Leu 225 230 235 240			720
ttt cca cat gtg aca cca aaa gga att aat ggt ata gac ttt aaa ggg Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe Lys Gly 245 250 255			768
gaa gcg ata act ttt aaa gca act act gct gga atc ctt gca aca ctt Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala Thr Leu 260 265 270			816
tct cat tgt att gaa cta atg gtt aaa cgt gag gac agc tgg cag aag Ser His Cys Ile Glu Leu Met Val Lys Arg Glu Asp Ser Trp Gln Lys 275 280 285			864
aga ctg gat aag gaa act gag aag aaa aga aga aca gag gaa gca tat Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg Thr Glu Glu Ala Tyr 290 295 300			912
aaa aat gca atg aca gaa ctt aag aaa aaa tcc cac ttt gga gga cca Lys Asn Ala Met Thr Glu Leu Lys Lys Lys Ser His Phe Gly Gly Pro 305 310 315 320			960
gat tat gaa gaa ggc cct aac agt ctg att aat gaa gaa gag ttc ttt Asp Tyr Glu Glu Gly Pro Asn Ser Leu Ile Asn Glu Glu Glu Phe Phe 325 330 335			1008

gat gct gtt gaa gct gct ctt gac aga caa gat aaa ata gaa gaa cag Asp Ala Val Glu Ala Ala Leu Asp Arg Gln Asp Lys Ile Glu Glu Gln 340 345 350	1056
tca cag agt gaa aag gtg aga tta cat tgg cct aca tcc ttg ccc tct Ser Gln Ser Glu Lys Val Arg Leu His Trp Pro Thr Ser Leu Pro Ser 355 360 365	1104
gga gat gcc ttt tct tct gtg ggg aca cat aga ttt gtc caa aag gtt Gly Asp Ala Phe Ser Ser Val Gly Thr His Arg Phe Val Gln Lys Val 370 375 380	1152
gaa gag atg gtg cag aac cac atg act tac tca tta cag gat gta ggc Glu Glu Met Val Gln Asn His Met Thr Tyr Ser Leu Gln Asp Val Gly 385 390 395 400	1200
gga gat gcc aat tgg cag ttg gtt gta gaa gaa gga gaa atg aag gta Gly Asp Ala Asn Trp Gln Leu Val Val Glu Glu Gly Glu Met Lys Val 405 410 415	1248
tac aga aga gaa gta gaa gaa aat ggg att gtt ctg gat cct tta aaa Tyr Arg Arg Glu Val Glu Glu Asn Gly Ile Val Leu Asp Pro Leu Lys 420 425 430	1296
gct acc cat gca gtt aaa ggc gtc aca gga cat gaa gtc tgc aat tat Ala Thr His Ala Val Lys Gly Val Thr Gly His Glu Val Cys Asn Tyr 435 440 445	1344
ttc tgg aat gtt gac gtt cgc aat gac tgg gaa aca act ata gaa aac Phe Trp Asn Val Asp Val Arg Asn Asp Trp Glu Thr Thr Ile Glu Asn 450 455 460	1392
ttt cat gtg gtg gaa aca tta gct gat aat gca atc atc att tat caa Phe His Val Val Glu Thr Leu Ala Asp Asn Ala Ile Ile Ile Tyr Gln 465 470 475 480	1440
aca cac aag agg gtg tgg cct gct tct cag cga gac gta tta tat ctt Thr His Lys Arg Val Trp Pro Ala Ser Gln Arg Asp Val Leu Tyr Leu 485 490 495	1488
tct gtc att cga aag ata cca gcc ttg act gaa aat gac cct gaa act Ser Val Ile Arg Lys Ile Pro Ala Leu Thr Glu Asn Asp Pro Glu Thr 500 505 510	1536
tgg ata gtt tgt aat ttt tct gtg gat cat gac agt gct cct cta aac Trp Ile Val Cys Asn Phe Ser Val Asp His Asp Ser Ala Pro Leu Asn 515 520 525	1584
aac cga tgt gtc cgt gcc aaa ata aat gtt gct atg att tgt caa acc Asn Arg Cys Val Arg Ala Lys Ile Asn Val Ala Met Ile Cys Gln Thr 530 535 540	1632
ttg gta agc cca cca gag gga aac cag gaa att agc agg gac aac att Leu Val Ser Pro Pro Glu Gly Asn Gln Glu Ile Ser Arg Asp Asn Ile 545 550 555 560	1680

cta tgc aag att aca tat gta gct aat gtg aac cct gga gga tgg gca 1728
 Leu Cys Lys Ile Thr Tyr Val Ala Asn Val Asn Pro Gly Gly Trp Ala
 565 570 575

cca gcc tca gtg tta agg gca gtg gca aag cga gag tat cct aaa ttt 1776
 Pro Ala Ser Val Leu Arg Ala Val Ala Lys Arg Glu Tyr Pro Lys Phe
 580 585 590

cta aaa cgt ttt act tct tac gtc caa gaa aaa act gca gga aag cct 1824
 Leu Lys Arg Phe Thr Ser Tyr Val Gln Glu Lys Thr Ala Gly Lys Pro
 595 600 605

att ttg ttc tag 1836
 Ile Leu Phe
 610

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Asn Gln Ser Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro Glu Thr Glu
 20 25 30

Ser Gly Pro Pro Val Glu Arg Cys Gly Val Leu Ser Lys Trp Thr Asn
 35 40 45

Tyr Ile His Gly Trp Gln Asp Arg Trp Val Val Leu Lys Asn Asn Ala
 50 55 60

Leu Ser Tyr Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly Cys Arg Gly
 65 70 75 80

Ser Ile Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe Asp Glu
 85 90 95

Cys Arg Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu Arg Ala
 100 105 110

Gln Asp Pro Asp His Arg Gln Gln Trp Ile Asp Ala Ile Glu Gln His
 115 120 125

Lys Thr Glu Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg Arg His Gly
130 135 140

Ser Met Val Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser Ala Thr Ser
145 150 155 160

Thr Ser Ser Phe Lys Lys Gly His Ser Leu Arg Glu Lys Leu Ala Glu
165 170 175

Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr Leu Gln
180 185 190

Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser Lys Asp Glu Leu Gln
195 200 205

Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr Thr Arg
210 215 220

Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly Asn Lys Glu Lys Leu
225 230 235 240

Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe Lys Gly
245 250 255

Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala Thr Leu
260 265 270

Ser His Cys Ile Glu Leu Met Val Lys Arg Glu Asp Ser Trp Gln Lys
275 280 285

Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg Thr Glu Glu Ala Tyr
290 295 300

Lys Asn Ala Met Thr Glu Leu Lys Lys Lys Ser His Phe Gly Gly Pro
305 310 315 320

Asp Tyr Glu Glu Gly Pro Asn Ser Leu Ile Asn Glu Glu Glu Phe Phe
325 330 335

Asp Ala Val Glu Ala Ala Leu Asp Arg Gln Asp Lys Ile Glu Glu Gln
340 345 350

Ser Gln Ser Glu Lys Val Arg Leu His Trp Pro Thr Ser Leu Pro Ser
355 360 365

Gly Asp Ala Phe Ser Ser Val Gly Thr His Arg Phe Val Gln Lys Val
370 375 380

Glu Glu Met Val Gln Asn His Met Thr Tyr Ser Leu Gln Asp Val Gly
385 390 395 400

Gly Asp Ala Asn Trp Gln Leu Val Val Glu Glu Gly Glu Met Lys Val
405 410 415

Tyr Arg Arg Glu Val Glu Glu Asn Gly Ile Val Leu Asp Pro Leu Lys
420 425 430

Ala Thr His Ala Val Lys Gly Val Thr Gly His Glu Val Cys Asn Tyr
435 440 445

Phe Trp Asn Val Asp Val Arg Asn Asp Trp Glu Thr Thr Ile Glu Asn
450 455 460

Phe His Val Val Glu Thr Leu Ala Asp Asn Ala Ile Ile Ile Tyr Gln
465 470 475 480

Thr His Lys Arg Val Trp Pro Ala Ser Gln Arg Asp Val Leu Tyr Leu
485 490 495

Ser Val Ile Arg Lys Ile Pro Ala Leu Thr Glu Asn Asp Pro Glu Thr
500 505 510

Trp Ile Val Cys Asn Phe Ser Val Asp His Asp Ser Ala Pro Leu Asn
515 520 525

Asn Arg Cys Val Arg Ala Lys Ile Asn Val Ala Met Ile Cys Gln Thr
530 535 540

Leu Val Ser Pro Pro Glu Gly Asn Gln Glu Ile Ser Arg Asp Asn Ile
545 550 555 560

Leu Cys Lys Ile Thr Tyr Val Ala Asn Val Asn Pro Gly Gly Trp Ala
565 570 575

Pro Ala Ser Val Leu Arg Ala Val Ala Lys Arg Glu Tyr Pro Lys Phe
580 585 590

Leu Lys Arg Phe Thr Ser Tyr Val Gln Glu Lys Thr Ala Gly Lys Pro
595 600 605

Ile Leu Phe
610

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Pro Ser Pro Asp Pro Ser Pro Arg Gly Leu Gly Ala Ser Ser Gly Ala
1 5 10 15

48

ggt gag gga gcg ggg gcc ggt ctc ctg ctc ggt tgt cga gcc tcc atg
Ala Glu Gly Ala Gly Ala Gly Leu Leu Leu Gly Cys Arg Ala Ser Met
20 25 30

96

tctg gat aat cag agc tgg aac tgc tgc ggc tgc gag gag gat cca gag
Ser Asp Asn Gln Ser Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro Glu
35 40 45

144

acg gag tct ggg ccg cct gtg gag cgc tgc ggc gtc ctc agt aag tgg
Thr Glu Ser Gly Pro Pro Val Glu Arg Cys Gly Val Leu Ser Lys Trp
50 55 60

192

aca aac tac att cat ggg tgg cag gat cgt tgg gta gtt ttg aaa aat
Thr Asn Tyr Ile His Gly Trp Gln Asp Arg Trp Val Val Leu Lys Asn
65 70 75 80

240

aat gct ctg agt tac tac aaa tct gaa gat gaa aca gag tat ggc tgc
Asn Ala Leu Ser Tyr Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly Cys
85 90 95

288

aga gga tcc atc tgt ctt agc aag gct gtc atc aca cct cac gat ttt
Arg Gly Ser Ile Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe
100 105 110

336

gat gaa tgt cga ttt gat att agt gta aat gat agt gtt tgg tat ctt
Asp Glu Cys Arg Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu
115 120 125

384

cgt gct cag gat cca gat cat aga cag caa tgg ata gat gcc att gaa Arg Ala Gln Asp Pro Asp His Arg Gln Gln Trp Ile Asp Ala Ile Glu 130 135 140	432
cag cac aag act gaa tct gga tat gga tct gaa tcc agc ttg cgt cga Gln His Lys Thr Glu Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg Arg 145 150 155 160	480
cat ggc tca atg gtg tcc ctg gtg tct gga gca agt ggc tac tct gca His Gly Ser Met Val Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser Ala 165 170 175	528
aca tcc acc tct tca ttc aag aaa ggc cac agt tta cgt gag aag ttg Thr Ser Thr Ser Ser Phe Lys Lys Gly His Ser Leu Arg Glu Lys Leu 180 185 190	576
gct gaa atg gaa aca ttt aga gac atc tta tgt aga caa gtt gac acg Ala Glu Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr 195 200 205	624
cta cag aag tac ttt gat gcc tgt gct gat gct gtc tct aag gat gaa Leu Gln Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser Lys Asp Glu 210 215 220	672
ctt caa agg gat aaa gtg gta gaa gat gat gaa gat gac ttt cct aca Leu Gln Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr 225 230 235 240	720
acg cgt tct gat ggt gac ttc ttg cat agt acc aac ggc aat aaa gaa Thr Arg Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly Asn Lys Glu 245 250 255	768
aag tta ttt cca cat gtg aca cca aaa gga att aat ggt ata gac ttt Lys Leu Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe 260 265 270	816
aaa ggg gaa gcg ata act ttt aaa gca act act gct gga atc ctt gca Lys Gly Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala 275 280 285	864
aca ctt tct cat tgt att gaa cta atg gtt aaa cgt gag gac agc tgg Thr Leu Ser His Cys Ile Glu Leu Met Val Lys Arg Glu Asp Ser Trp 290 295 300	912
cag aag aga ctg gat aag gaa act gag aag aaa aga aga aca gag gaa Gln Lys Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg Thr Glu Glu 305 310 315 320	960
gca tat aaa aat gca atg aca gaa ctt aag aaa aaa tcc cac ttt gga Ala Tyr Lys Asn Ala Met Thr Glu Leu Lys Lys Lys Ser His Phe Gly 325 330 335	1008
gga cca gat tat gaa gaa ggc cct aac agt ctg att aat gaa gaa gag Gly Pro Asp Tyr Glu Glu Gly Pro Asn Ser Leu Ile Asn Glu Glu Glu 340 345 350	1056

ttc ttt gat gct gtt gaa gct gct ctt gac aga caa gat aaa ata gaa Phe Phe Asp Ala Val Glu Ala Ala Leu Asp Arg Gln Asp Lys Ile Glu 355 360 365	1104
gaa cag tca cag agt gaa aag gtg aga tta cat tgg cct aca tcc ttg Glu Gln Ser Gln Ser Glu Lys Val Arg Leu His Trp Pro Thr Ser Leu 370 375 380	1152
ccc tct gga gat gcc ttt tct tct gtg ggg aca cat aga ttt gtc caa Pro Ser Gly Asp Ala Phe Ser Ser Val Gly Thr His Arg Phe Val Gln 385 390 395 400	1200
aag ccc tat agt cgc tct tcc tcc atg tct tcc att gat cta gtc agt Lys Pro Tyr Ser Arg Ser Ser Ser Met Ser Ser Ile Asp Leu Val Ser 405 410 415	1248
gcc tct gat gat gtt cac aga ttc agc tcc cag gtt gaa gag atg gtg Ala Ser Asp Asp Val His Arg Phe Ser Ser Gln Val Glu Glu Met Val 420 425 430	1296
cag aac cac atg act tac tca tta cag gat gta ggc gga gat gcc aat Gln Asn His Met Thr Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala Asn 435 440 445	1344
tgg cag ttg gtt gta gaa gaa gga gaa atg aag gta tac aga aga gaa Trp Gln Leu Val Val Glu Glu Gly Glu Met Lys Val Tyr Arg Arg Glu 450 455 460	1392
gta gaa gaa aat ggg att gtt ctg gat cct tta aaa gct acc cat gca Val Glu Glu Asn Gly Ile Val Leu Asp Pro Leu Lys Ala Thr His Ala 465 470 475 480	1440
gtt aaa ggc gtc aca gga cat gaa gtc tgc aat tat ttc tgg aat gtt Val Lys Gly Val Thr Gly His Glu Val Cys Asn Tyr Phe Trp Asn Val 485 490 495	1488
gac gtt cgc aat gac tgg gaa aca act ata gaa aac ttt cat gtg gtg Asp Val Arg Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe His Val Val 500 505 510	1536
gaa aca tta gct gat aat gca atc atc att tat caa aca cac aag agg Glu Thr Leu Ala Asp Asn Ala Ile Ile Ile Tyr Gln Thr His Lys Arg 515 520 525	1584
gtg tgg cct gct tct cag cga gac gta tta tat ctt tct gtc att cga Val Trp Pro Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser Val Ile Arg 530 535 540	1632
aag ata cca gcc ttg act gaa aat gac cct gaa act tgg ata gtt tgt Lys Ile Pro Ala Leu Thr Glu Asn Asp Pro Glu Thr Trp Ile Val Cys 545 550 555 560	1680
aat ttt tct gtg gat cat gac agt gct cct cta aac aac cga tgt gtc Asn Phe Ser Val Asp His Asp Ser Ala Pro Leu Asn Asn Arg Cys Val 565 570 575	1728
cgt gcc aaa ata aat gtt gct atg att tgt caa acc ttg gta agc cca	1776

Arg Ala Lys Ile Asn Val Ala Met Ile Cys Gln Thr Leu Val Ser Pro
 580 585 590

cca gag gga aac cag gaa att agc agg gac aac att cta tgc aag att 1824
 Pro Glu Gly Asn Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile
 595 600 605

aca tat gta gct aat gtg aac cct gga gga tgg gca cca gcc tca gtg 1872
 Thr Tyr Val Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val
 610 615 620

tta agg gca gtg gca aag cga gag tat cct aaa ttt cta aaa cgt ttt 1920
 Leu Arg Ala Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys Arg Phe
 625 630 635 640

act tct tac gtc caa gaa aaa act gca gga aag cct att ttg ttc tag 1968
 Thr Ser Tyr Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe
 645 650 655

<210> 14
 <211> 655
 <212> PRT
 <213> artificial

<220>
 <223> Synthetic

<400> 14

Pro Ser Pro Asp Pro Ser Pro Arg Gly Leu Gly Ala Ser Ser Gly Ala
 1 5 10 15

Ala Glu Gly Ala Gly Ala Gly Leu Leu Leu Gly Cys Arg Ala Ser Met
 20 25 30

Ser Asp Asn Gln Ser Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro Glu
 35 40 45

Thr Glu Ser Gly Pro Pro Val Glu Arg Cys Gly Val Leu Ser Lys Trp
 50 55 60

Thr Asn Tyr Ile His Gly Trp Gln Asp Arg Trp Val Val Leu Lys Asn
 65 70 75 80

Asn Ala Leu Ser Tyr Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly Cys
 85 90 95

Arg Gly Ser Ile Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe
 100 105 110

Asp Glu Cys Arg Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu
115 120 125

Arg Ala Gln Asp Pro Asp His Arg Gln Gln Trp Ile Asp Ala Ile Glu
130 135 140

Gln His Lys Thr Glu Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg Arg
145 150 155 160

His Gly Ser Met Val Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser Ala
165 170 175

Thr Ser Thr Ser Ser Phe Lys Lys Gly His Ser Leu Arg Glu Lys Leu
180 185 190

Ala Glu Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr
195 200 205

Leu Gln Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser Lys Asp Glu
210 215 220

Leu Gln Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr
225 230 235 240

Thr Arg Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly Asn Lys Glu
245 250 255

Lys Leu Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe
260 265 270

Lys Gly Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala
275 280 285

Thr Leu Ser His Cys Ile Glu Leu Met Val Lys Arg Glu Asp Ser Trp
290 295 300

Gln Lys Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg Thr Glu Glu
305 310 315 320

Ala Tyr Lys Asn Ala Met Thr Glu Leu Lys Lys Lys Ser His Phe Gly
325 330 335

Gly Pro Asp Tyr Glu Glu Gly Pro Asn Ser Leu Ile Asn Glu Glu Glu
340 345 350

Phe Phe Asp Ala Val Glu Ala Ala Leu Asp Arg Gln Asp Lys Ile Glu
355 360 365

Glu Gln Ser Gln Ser Glu Lys Val Arg Leu His Trp Pro Thr Ser Leu
370 375 380

Pro Ser Gly Asp Ala Phe Ser Ser Val Gly Thr His Arg Phe Val Gln
385 390 395 400

Lys Pro Tyr Ser Arg Ser Ser Ser Met Ser Ser Ile Asp Leu Val Ser
405 410 415

Ala Ser Asp Asp Val His Arg Phe Ser Ser Gln Val Glu Glu Met Val
420 425 430

Gln Asn His Met Thr Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala Asn
435 440 445

Trp Gln Leu Val Val Glu Glu Gly Glu Met Lys Val Tyr Arg Arg Glu
450 455 460

Val Glu Glu Asn Gly Ile Val Leu Asp Pro Leu Lys Ala Thr His Ala
465 470 475 480

Val Lys Gly Val Thr Gly His Glu Val Cys Asn Tyr Phe Trp Asn Val
485 490 495

Asp Val Arg Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe His Val Val
500 505 510

Glu Thr Leu Ala Asp Asn Ala Ile Ile Ile Tyr Gln Thr His Lys Arg
515 520 525

Val Trp Pro Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser Val Ile Arg
530 535 540

Lys Ile Pro Ala Leu Thr Glu Asn Asp Pro Glu Thr Trp Ile Val Cys
545 550 555 560

Asn Phe Ser Val Asp His Asp Ser Ala Pro Leu Asn Asn Arg Cys Val

565

570

575

Arg Ala Lys Ile Asn Val Ala Met Ile Cys Gln Thr Leu Val Ser Pro
 580 585 590

Pro Glu Gly Asn Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile
 595 600 605

Thr Tyr Val Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val
 610 615 620

Leu Arg Ala Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys Arg Phe
 625 630 635 640

Thr Ser Tyr Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe
 645 650 655

<210> 15
 <211> 1890
 <212> DNA
 <213> artificial

<220>
 <223> Synthetic

<220>
 <221> CDS
 <222> (1)..(1890)

<400> 15
 cca tcc ccc gac cct tca ccc cga gga ctg ggc gcc tcc tcc ggc gca 48
 Pro Ser Pro Asp Pro Ser Pro Arg Gly Leu Gly Ala Ser Ser Gly Ala
 1 5 10 15

gct gag gga gcg ggg gcc ggt ctc ctg ctc ggt tgt cga gcc tcc atg 96
 Ala Glu Gly Ala Gly Ala Gly Leu Leu Leu Gly Cys Arg Ala Ser Met
 20 25 30

tcg gat aat cag agc tgg aac tcg tcg ggc tcg gag gag gat cca gag 144
 Ser Asp Asn Gln Ser Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro Glu
 35 40 45

acg gag tct ggg ccg cct gtg gag cgc tgc ggg gtc ctc agt aag tgg 192
 Thr Glu Ser Gly Pro Pro Val Glu Arg Cys Gly Val Leu Ser Lys Trp
 50 55 60

aca aac tac att cat ggg tgg cag gat cgt tgg gta gtt ttg aaa aat 240
 Thr Asn Tyr Ile His Gly Trp Gln Asp Arg Trp Val Val Leu Lys Asn
 65 70 75 80

aat gct ctg agt tac tac aaa tct gaa gat gaa aca gag tat ggc tgc	288
Asn Ala Leu Ser Tyr Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly Cys	
85 90 95	
aga gga tcc atc tgt ctt agc aag gct gtc atc aca cct cac gat ttt	336
Arg Gly Ser Ile Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe	
100 105 110	
gat gaa tgt cga ttt gat att agt gta aat gat agt gtt tgg tat ctt	384
Asp Glu Cys Arg Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu	
115 120 125	
cgt gct cag gat cca gat cat aga cag caa tgg ata gat gcc att gaa	432
Arg Ala Gln Asp Pro Asp His Arg Gln Gln Trp Ile Asp Ala Ile Glu	
130 135 140	
cag cac aag act gaa tct gga tat gga tct gaa tcc agc ttg cgt cga	480
Gln His Lys Thr Glu Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg Arg	
145 150 155 160	
cat ggc tca atg gtg tcc ctg gtg tct gga gca agt ggc tac tct gca	528
His Gly Ser Met Val Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser Ala	
165 170 175	
aca tcc acc tct tca ttc aag aaa ggc cac agt tta cgt gag aag ttg	576
Thr Ser Thr Ser Ser Phe Lys Lys Gly His Ser Leu Arg Glu Lys Leu	
180 185 190	
gct gaa atg gaa aca ttt aga gac atc tta tgt aga caa gtt gac acg	624
Ala Glu Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr	
195 200 205	
cta cag aag tac ttt gat gac tgt gct gat gct gtc tct aag gat gaa	672
Leu Gln Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser Lys Asp Glu	
210 215 220	
ctt caa agg gat aaa gtg gta gaa gat gat gaa gat gac ttt cct aca	720
Leu Gln Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr	
225 230 235 240	
acg cgt tct gat ggt gac ttc ttg cat agt acc aac ggc aat aaa gaa	768
Thr Arg Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly Asn Lys Glu	
245 250 255	
aag tta ttt cca cat gtg aca cca aaa gga att aat ggt ata gac ttt	816
Lys Leu Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe	
260 265 270	
aaa ggg gaa gcg ata act ttt aaa gca act act gct gga atc ctt gca	864
Lys Gly Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala	
275 280 285	
aca ctt tct cat tgt att gaa cta atg gtt aaa cgt gag gac agc tgg	912
Thr Leu Ser His Cys Ile Glu Leu Met Val Lys Arg Glu Asp Ser Trp	
290 295 300	
cag aag aga ctg gat aag gaa act gag aag aaa aga aga aca gag gaa	960

Gln Lys Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg Thr Glu Glu
305 310 315 320

gca tat aaa aat gca atg aca gaa ctt aag aaa aaa tcc cac ttt gga 1008
Ala Tyr Lys Asn Ala Met Thr Glu Leu Lys Lys Lys Ser His Phe Gly
325 330 335

gga cca gat tat gaa gaa ggc cct aac agt ctg att aat gaa gaa gag 1056
Gly Pro Asp Tyr Glu Glu Gly Pro Asn Ser Leu Ile Asn Glu Glu Glu
340 345 350

ttc ttt gat gct gtt gaa gct gct ctt gac aga caa gat aaa ata gaa 1104
Phe Phe Asp Ala Val Glu Ala Ala Leu Asp Arg Gln Asp Lys Ile Glu
355 360 365

gaa cag tca cag agt gaa aag gtg aga tta cat tgg cct aca tcc ttg 1152
Glu Gln Ser Gln Ser Glu Lys Val Arg Leu His Trp Pro Thr Ser Leu
370 375 380

ccc tct gga gat gcc ttt tct tct gtg ggg aca cat aga ttt gtc caa 1200
Pro Ser Gly Asp Ala Phe Ser Ser Val Gly Thr His Arg Phe Val Gln
385 390 395 400

aag gtt gaa gag atg gtg cag aac cac atg act tac tca tta cag gat 1248
Lys Val Glu Glu Met Val Gln Asn His Met Thr Tyr Ser Leu Gln Asp
405 410 415

gta ggc gga gat gcc aat tgg cag ttg gtt gta gaa gaa gga gaa atg 1296
Val Gly Gly Asp Ala Asn Trp Gln Leu Val Val Glu Glu Gly Glu Met
420 425 430

aag gta tac aga aga gaa gta gaa gaa aat ggg att gtt ctg gat cct 1344
Lys Val Tyr Arg Arg Glu Val Glu Glu Asn Gly Ile Val Leu Asp Pro
435 440 445

tta aaa gct acc cat gca gtt aaa ggc gtc aca gga cat gaa gtc tgc 1392
Leu Lys Ala Thr His Ala Val Lys Gly Val Thr Gly His Glu Val Cys
450 455 460

aat tat ttc tgg aat gtt gac gtt cgc aat gac tgg gaa aca act ata 1440
Asn Tyr Phe Trp Asn Val Asp Val Arg Asn Asp Trp Glu Thr Thr Ile
465 470 475 480

gaa aac ttt cat gtg gtg gaa aca tta gct gat aat gca atc atc att 1488
Glu Asn Phe His Val Val Glu Thr Leu Ala Asp Asn Ala Ile Ile Ile
485 490 495

tat caa aca cac aag agg gtg tgg cct gct tct cag cga gac gta tta 1536
Tyr Gln Thr His Lys Arg Val Trp Pro Ala Ser Gln Arg Asp Val Leu
500 505 510

tat ctt tct gtc att cga aag ata cca gcc ttg act gaa aat gac cct 1584
Tyr Leu Ser Val Ile Arg Lys Ile Pro Ala Leu Thr Glu Asn Asp Pro
515 520 525

gaa act tgg ata gtt tgt aat ttt tct gtg gat cat gac agt gct cct 1632
Glu Thr Trp Ile Val Cys Asn Phe Ser Val Asp His Asp Ser Ala Pro

530	535	540	
cta aac aac cga tgt gtc cgt gcc aaa ata aat gtt gct atg att tgt			1680
Leu Asn Asn Arg Cys Val Arg Ala Lys Ile Asn Val Ala Met Ile Cys			
545	550	555	560
caa acc ttg gta agc cca cca gag gga aac cag gaa att agc agg gac			1728
Gln Thr Leu Val Ser Pro Pro Glu Gly Asn Gln Glu Ile Ser Arg Asp			
	565	570	575
aac att cta tgc aag att aca tat gta gct aat gtg aac cct gga gga			1776
Asn Ile Leu Cys Lys Ile Thr Tyr Val Ala Asn Val Asn Pro Gly Gly			
	580	585	590
tgg gca cca gcc tca gtg tta agg gca gtg gca aag cga gag tat cct			1824
Trp Ala Pro Ala Ser Val Leu Arg Ala Val Ala Lys Arg Glu Tyr Pro			
	595	600	605
aaa ttt cta aaa cgt ttt act tct tac gtc caa gaa aaa act gca gga			1872
Lys Phe Leu Lys Arg Phe Thr Ser Tyr Val Gln Glu Lys Thr Ala Gly			
	610	615	620
aag cct att ttg ttc tag			1890
Lys Pro Ile Leu Phe			
625			

<210> 16
 <211> 629
 <212> PRT
 <213> artificial

<220>
 <223> Synthetic

<400> 16

Pro	Ser	Pro	Asp	Pro	Ser	Pro	Arg	Gly	Leu	Gly	Ala	Ser	Ser	Gly	Ala
1				5					10					15	

Ala	Glu	Gly	Ala	Gly	Ala	Gly	Leu	Leu	Leu	Gly	Cys	Arg	Ala	Ser	Met
			20					25					30		

Ser	Asp	Asn	Gln	Ser	Trp	Asn	Ser	Ser	Gly	Ser	Glu	Glu	Asp	Pro	Glu
		35					40					45			

Thr	Glu	Ser	Gly	Pro	Pro	Val	Glu	Arg	Cys	Gly	Val	Leu	Ser	Lys	Trp
	50					55					60				

Thr	Asn	Tyr	Ile	His	Gly	Trp	Gln	Asp	Arg	Trp	Val	Val	Leu	Lys	Asn
65					70					75					80

Asn Ala Leu Ser Tyr Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly Cys
85 90 95

Arg Gly Ser Ile Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe
100 105 110

Asp Glu Cys Arg Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu
115 120 125

Arg Ala Gln Asp Pro Asp His Arg Gln Gln Trp Ile Asp Ala Ile Glu
130 135 140

Gln His Lys Thr Glu Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg Arg
145 150 155 160

His Gly Ser Met Val Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser Ala
165 170 175

Thr Ser Thr Ser Ser Phe Lys Lys Gly His Ser Leu Arg Glu Lys Leu
180 185 190

Ala Glu Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr
195 200 205

Leu Gln Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser Lys Asp Glu
210 215 220

Leu Gln Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr
225 230 235 240

Thr Arg Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly Asn Lys Glu
245 250 255

Lys Leu Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe
260 265 270

Lys Gly Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala
275 280 285

Thr Leu Ser His Cys Ile Glu Leu Met Val Lys Arg Glu Asp Ser Trp
290 295 300

Gln Lys Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg Thr Glu Glu

305		310		315		320
Ala Tyr Lys Asn	Ala Met Thr Glu Leu	Lys Lys Lys Ser His Phe Gly				
	325		330			335
Gly Pro Asp Tyr	Glu Glu Gly Pro Asn Ser Leu Ile Asn Glu Glu Glu					
	340		345			350
Phe Phe Asp Ala Val	Glu Ala Ala Leu Asp Arg Gln Asp Lys Ile Glu					
	355		360			365
Glu Gln Ser Gln Ser	Glu Lys Val Arg Leu His Trp Pro Thr Ser Leu					
	370		375			380
Pro Ser Gly Asp Ala Phe Ser Ser Val Gly Thr His Arg Phe Val Gln						
385		390		395		400
Lys Val Glu Glu Met Val Gln Asn His Met Thr Tyr Ser Leu Gln Asp						
	405		410			415
Val Gly Gly Asp Ala Asn Trp Gln Leu Val Val Glu Glu Gly Glu Met						
	420		425			430
Lys Val Tyr Arg Arg Glu Val Glu Glu Asn Gly Ile Val Leu Asp Pro						
	435		440			445
Leu Lys Ala Thr His Ala Val Lys Gly Val Thr Gly His Glu Val Cys						
	450		455			460
Asn Tyr Phe Trp Asn Val Asp Val Arg Asn Asp Trp Glu Thr Thr Ile						
465		470		475		480
Glu Asn Phe His Val Val Glu Thr Leu Ala Asp Asn Ala Ile Ile Ile						
	485		490			495
Tyr Gln Thr His Lys Arg Val Trp Pro Ala Ser Gln Arg Asp Val Leu						
	500		505			510
Tyr Leu Ser Val Ile Arg Lys Ile Pro Ala Leu Thr Glu Asn Asp Pro						
	515		520			525
Glu Thr Trp Ile Val Cys Asn Phe Ser Val Asp His Asp Ser Ala Pro						
	530		535			540

Leu Asn Asn Arg Cys Val Arg Ala Lys Ile Asn Val Ala Met Ile Cys
 545 550 555 560

Gln Thr Leu Val Ser Pro Pro Glu Gly Asn Gln Glu Ile Ser Arg Asp
 565 570 575

Asn Ile Leu Cys Lys Ile Thr Tyr Val Ala Asn Val Asn Pro Gly Gly
 580 585 590

Trp Ala Pro Ala Ser Val Leu Arg Ala Val Ala Lys Arg Glu Tyr Pro
 595 600 605

Lys Phe Leu Lys Arg Phe Thr Ser Tyr Val Gln Glu Lys Thr Ala Gly
 610 615 620

Lys Pro Ile Leu Phe
 625

<210> 17
 <211> 2037
 <212> DNA
 <213> artificial

<220>
 <223> Synthetic

<220>
 <221> CDS
 <222> (1)..(2037)

<400> 17
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 Arg Arg Gly Gly Arg Thr Ser Ser Leu Leu Leu Leu Pro Pro Thr Pro
 1 5 10 15

gag cgg gca ctc ttc gct tcg cca tcc ccc gac cct tca ccc cga gga 96
 Glu Arg Ala Leu Phe Ala Ser Pro Ser Pro Asp Pro Ser Pro Arg Gly
 20 25 30

ctg ggc gcc tcc tcc ggc gca gct gag gga gcg ggg gcc ggt ctc ctg 144
 Leu Gly Ala Ser Ser Gly Ala Ala Glu Gly Ala Gly Ala Gly Leu Leu
 35 40 45

ctc ggt tgt cga gcc tcc atg tcg gat aat cag agc tgg aac tcg tcg 192
 Leu Gly Cys Arg Ala Ser Met Ser Asp Asn Gln Ser Trp Asn Ser Ser
 50 55 60

ggc tcg gag gag gat cca gag acg gag tct ggg ccg cct gtg gag cgc 240

Gly 65	Ser	Glu	Glu	Asp	Pro 70	Glu	Thr	Glu	Ser	Gly 75	Pro	Pro	Val	Glu	Arg 80	
tgc	ggg	gtc	ctc	agt	aag	tgg	aca	aac	tac	att	cat	ggg	tgg	cag	gat	288
Cys	Gly	Val	Leu	Ser 85	Lys	Trp	Thr	Asn	Tyr 90	Ile	His	Gly	Trp	Gln	Asp 95	
cgt	tgg	gta	gtt	ttg	aaa	aat	aat	gct	ctg	agt	tac	tac	aaa	tct	gaa	336
Arg	Trp	Val	Val	Leu 100	Lys	Asn	Asn	Ala 105	Leu	Ser	Tyr	Tyr	Lys	Ser	Glu 110	
gat	gaa	aca	gag	tat	ggc	tgc	aga	gga	tcc	atc	tgt	ctt	agc	aag	gct	384
Asp	Glu	Thr 115	Glu	Tyr	Gly	Cys	Arg 120	Gly	Ser	Ile	Cys	Leu 125	Ser	Lys	Ala	
gtc	atc	aca	cct	cac	gat	ttt	gat	gaa	tgt	cga	ttt	gat	att	agt	gta	432
Val	Ile	Thr	Pro	His	Asp	Phe 135	Asp	Glu	Cys	Arg	Phe 140	Asp	Ile	Ser	Val	
aat	gat	agt	gtt	tgg	tat	ctt	cgt	gct	cag	gat	cca	gat	cat	aga	cag	480
Asn	Asp	Ser	Val	Trp	Tyr 150	Leu	Arg	Ala	Gln	Asp 155	Pro	Asp	His	Arg	Gln 160	
caa	tgg	ata	gat	gcc	att	gaa	cag	cac	aag	act	gaa	tct	gga	tat	gga	528
Gln	Trp	Ile	Asp	Ala 165	Ile	Glu	Gln	His	Lys 170	Thr	Glu	Ser	Gly	Tyr 175	Gly	
tct	gaa	tcc	agc	ttg	cgt	cga	cat	ggc	tca	atg	gtg	tcc	ctg	gtg	tct	576
Ser	Glu	Ser	Ser	Leu 180	Arg	Arg	His	Gly 185	Ser	Met	Val	Ser	Leu 190	Val	Ser	
gga	gca	agt	ggc	tac	tct	gca	aca	tcc	acc	tct	tca	ttc	aag	aaa	ggc	624
Gly	Ala	Ser 195	Gly	Tyr	Ser	Ala	Thr 200	Ser	Thr	Ser	Ser	Phe 205	Lys	Lys	Gly	
cac	agt	tta	cgt	gag	aag	ttg	gct	gaa	atg	gaa	aca	ttt	aga	gac	atc	672
His	Ser	Leu	Arg	Glu	Lys	Leu 215	Ala	Glu	Met	Glu	Thr 220	Phe	Arg	Asp	Ile	
tta	tgt	aga	caa	gtt	gac	acg	cta	cag	aag	tac	ttt	gat	gcc	tgt	gct	720
Leu	Cys	Arg	Gln	Val	Asp 230	Thr	Leu	Gln	Lys	Tyr 235	Phe	Asp	Ala	Cys	Ala 240	
gat	gct	gtc	tct	aag	gat	gaa	ctt	caa	agg	gat	aaa	gtg	gta	gaa	gat	768
Asp	Ala	Val	Ser	Lys 245	Asp	Glu	Leu	Gln	Arg 250	Asp	Lys	Val	Val	Glu 255	Asp	
gat	gaa	gat	gac	ttt	cct	aca	acg	cgt	tct	gat	ggg	gac	ttc	ttg	cat	816
Asp	Glu	Asp	Asp	Phe 260	Pro	Thr	Thr	Arg 265	Ser	Asp	Gly	Asp	Phe 270	Leu	His	
agt	acc	aac	ggc	aat	aaa	gaa	aag	tta	ttt	cca	cat	gtg	aca	cca	aaa	864
Ser	Thr	Asn	Gly	Asn 275	Lys	Glu	Lys 280	Leu	Phe	Pro	His	Val	Thr	Pro	Lys	
gga	att	aat	ggg	ata	gac	ttt	aaa	ggg	gaa	gcg	ata	act	ttt	aaa	gca	912
Gly	Ile	Asn	Gly	Ile	Asp	Phe	Lys	Gly	Glu	Ala	Ile	Thr	Phe	Lys	Ala	

290	295	300	
act act gct gga atc ctt gca aca ctt tct cat tgt att gaa cta atg Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu Met 305 310 315 320			960
gtt aaa cgt gag gac agc tgg cag aag aga ctg gat aag gaa act gag Val Lys Arg Glu Asp Ser Trp Gln Lys Arg Leu Asp Lys Glu Thr Glu 325 330 335			1008
aag aaa aga aga aca gag gaa gca tat aaa aat gca atg aca gaa ctt Lys Lys Arg Arg Thr Glu Glu Ala Tyr Lys Asn Ala Met Thr Glu Leu 340 345 350			1056
aag aaa aaa tcc cac ttt gga gga cca gat tat gaa gaa ggc cct aac Lys Lys Lys Ser His Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro Asn 355 360 365			1104
agt ctg att aat gaa gaa gag ttc ttt gat gct gtt gaa gct gct ctt Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala Leu 370 375 380			1152
gac aga caa gat aaa ata gaa gaa cag tca cag agt gaa aag gtg aga Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val Arg 385 390 395 400			1200
tta cat tgg cct aca tcc ttg ccc tct gga gat gcc ttt tct tct gtg Leu His Trp Pro Thr Ser Leu Pro Ser Gly Asp Ala Phe Ser Ser Val 405 410 415			1248
ggg aca cat aga ttt gtc caa aag ccc tat agt cgc tct tcc tcc atg Gly Thr His Arg Phe Val Gln Lys Pro Tyr Ser Arg Ser Ser Ser Met 420 425 430			1296
tct tcc att gat cta gtc agt gcc tct gat gat gtt cac aga ttc agc Ser Ser Ile Asp Leu Val Ser Ala Ser Asp Asp Val His Arg Phe Ser 435 440 445			1344
tcc cag gtt gaa gag atg gtg cag aac cac atg act tac tca tta cag Ser Gln Val Glu Glu Met Val Gln Asn His Met Thr Tyr Ser Leu Gln 450 455 460			1392
gat gta ggc gga gat gcc aat tgg cag ttg gtt gta gaa gaa gga gaa Asp Val Gly Gly Asp Ala Asn Trp Gln Leu Val Val Glu Glu Gly Glu 465 470 475 480			1440
atg aag gta tac aga aga gaa gta gaa gaa aat ggg att gtt ctg gat Met Lys Val Tyr Arg Arg Glu Val Glu Glu Asn Gly Ile Val Leu Asp 485 490 495			1488
cct tta aaa gct acc cat gca gtt aaa ggc gtc aca gga cat gaa gtc Pro Leu Lys Ala Thr His Ala Val Lys Gly Val Thr Gly His Glu Val 500 505 510			1536
tgc aat tat ttc tgg aat gtt gac gtt cgc aat gac tgg gaa aca act Cys Asn Tyr Phe Trp Asn Val Asp Val Arg Asn Asp Trp Glu Thr Thr 515 520 525			1584

ata gaa aac ttt cat gtg gtg gaa aca tta gct gat aat gca atc atc	1632
Ile Glu Asn Phe His Val Val Glu Thr Leu Ala Asp Asn Ala Ile Ile	
530 535 540	

att tat caa aca cac aag agg gtg tgg cct gct tct cag cga gac gta	1680
Ile Tyr Gln Thr His Lys Arg Val Trp Pro Ala Ser Gln Arg Asp Val	
545 550 555 560	

tta tat ctt tct gtc att cga aag ata cca gcc ttg act gaa aat gac	1728
Leu Tyr Leu Ser Val Ile Arg Lys Ile Pro Ala Leu Thr Glu Asn Asp	
565 570 575	

cct gaa act tgg ata gtt tgt aat ttt tct gtg gat cat gac agt gct	1776
Pro Glu Thr Trp Ile Val Cys Asn Phe Ser Val Asp His Asp Ser Ala	
580 585 590	

cct cta aac aac cga tgt gtc cgt gcc aaa ata aat gtt gct atg att	1824
Pro Leu Asn Asn Arg Cys Val Arg Ala Lys Ile Asn Val Ala Met Ile	
595 600 605	

tgt caa acc ttg gta agc cca cca gag gga aac cag gaa att agc agg	1872
Cys Gln Thr Leu Val Ser Pro Pro Glu Gly Asn Gln Glu Ile Ser Arg	
610 615 620	

gac aac att cta tgc aag att aca tat gta gct aat gtg aac cct gga	1920
Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val Ala Asn Val Asn Pro Gly	
625 630 635 640	

gga tgg gca cca gcc tca gtg tta agg gca gtg gca aag cga gag tat	1968
Gly Trp Ala Pro Ala Ser Val Leu Arg Ala Val Ala Lys Arg Glu Tyr	
645 650 655	

cct aaa ttt cta aaa cgt ttt act tct tac gtc caa gaa aaa act gca	2016
Pro Lys Phe Leu Lys Arg Phe Thr Ser Tyr Val Gln Glu Lys Thr Ala	
660 665 670	

gga aag cct att ttg ttc tag	2037
Gly Lys Pro Ile Leu Phe	
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20

25

30

Leu Gly Ala Ser Ser Gly Ala Ala Glu Gly Ala Gly Ala Gly Leu Leu
 35 40 45

Leu Gly Cys Arg Ala Ser Met Ser Asp Asn Gln Ser Trp Asn Ser Ser
 50 55 60

Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly Pro Pro Val Glu Arg
 65 70 75 80

Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile His Gly Trp Gln Asp
 85 90 95

Arg Trp Val Val Leu Lys Asn Asn Ala Leu Ser Tyr Tyr Lys Ser Glu
 100 105 110

Asp Glu Thr Glu Tyr Gly Cys Arg Gly Ser Ile Cys Leu Ser Lys Ala
 115 120 125

Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg Phe Asp Ile Ser Val
 130 135 140

Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp Pro Asp His Arg Gln
 145 150 155 160

Gln Trp Ile Asp Ala Ile Glu Gln His Lys Thr Glu Ser Gly Tyr Gly
 165 170 175

Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met Val Ser Leu Val Ser
 180 185 190

Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser Ser Phe Lys Lys Gly
 195 200 205

His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu Thr Phe Arg Asp Ile
 210 215 220

Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Tyr Phe Asp Ala Cys Ala
 225 230 235 240

Asp Ala Val Ser Lys Asp Glu Leu Gln Arg Asp Lys Val Val Glu Asp
 245 250 255

Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp Gly Asp Phe Leu His
260 265 270

Ser Thr Asn Gly Asn Lys Glu Lys Leu Phe Pro His Val Thr Pro Lys
275 280 285

Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala Ile Thr Phe Lys Ala
290 295 300

Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu Met
305 310 315 320

Val Lys Arg Glu Asp Ser Trp Gln Lys Arg Leu Asp Lys Glu Thr Glu
325 330 335

Lys Lys Arg Arg Thr Glu Glu Ala Tyr Lys Asn Ala Met Thr Glu Leu
340 345 350

Lys Lys Lys Ser His Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro Asn
355 360 365

Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala Leu
370 375 380

Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val Arg
385 390 395 400

Leu His Trp Pro Thr Ser Leu Pro Ser Gly Asp Ala Phe Ser Ser Val
405 410 415

Gly Thr His Arg Phe Val Gln Lys Pro Tyr Ser Arg Ser Ser Ser Met
420 425 430

Ser Ser Ile Asp Leu Val Ser Ala Ser Asp Asp Val His Arg Phe Ser
435 440 445

Ser Gln Val Glu Glu Met Val Gln Asn His Met Thr Tyr Ser Leu Gln
450 455 460

Asp Val Gly Gly Asp Ala Asn Trp Gln Leu Val Val Glu Glu Gly Glu
465 470 475 480

Met Lys Val Tyr Arg Arg Glu Val Glu Glu Asn Gly Ile Val Leu Asp
485 490 495

Pro Leu Lys Ala Thr His Ala Val Lys Gly Val Thr Gly His Glu Val
500 505 510

Cys Asn Tyr Phe Trp Asn Val Asp Val Arg Asn Asp Trp Glu Thr Thr
515 520 525

Ile Glu Asn Phe His Val Val Glu Thr Leu Ala Asp Asn Ala Ile Ile
530 535 540

Ile Tyr Gln Thr His Lys Arg Val Trp Pro Ala Ser Gln Arg Asp Val
545 550 555 560

Leu Tyr Leu Ser Val Ile Arg Lys Ile Pro Ala Leu Thr Glu Asn Asp
565 570 575

Pro Glu Thr Trp Ile Val Cys Asn Phe Ser Val Asp His Asp Ser Ala
580 585 590

Pro Leu Asn Asn Arg Cys Val Arg Ala Lys Ile Asn Val Ala Met Ile
595 600 605

Cys Gln Thr Leu Val Ser Pro Pro Glu Gly Asn Gln Glu Ile Ser Arg
610 615 620

Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val Ala Asn Val Asn Pro Gly
625 630 635 640

Gly Trp Ala Pro Ala Ser Val Leu Arg Ala Val Ala Lys Arg Glu Tyr
645 650 655

Pro Lys Phe Leu Lys Arg Phe Thr Ser Tyr Val Gln Glu Lys Thr Ala
660 665 670

Gly Lys Pro Ile Leu Phe
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<222> (1)..(1959)

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1				5				10						15		

gag	cgg	gca	ctc	ttc	gct	tcg	cca	tcc	ccc	gac	cct	tca	ccc	cga	gga	96
Glu	Arg	Ala	Leu	Phe	Ala	Ser	Pro	Ser	Pro	Asp	Pro	Ser	Pro	Arg	Gly	
			20					25					30			

ctg	ggc	gcc	tcc	tcc	ggc	gca	gct	gag	gga	gcg	ggg	gcc	ggt	ctc	ctg	144
Leu	Gly	Ala	Ser	Ser	Gly	Ala	Ala	Glu	Gly	Ala	Gly	Ala	Gly	Leu	Leu	
			35					40					45			

ctc	ggt	tgt	cga	gcc	tcc	atg	tcg	gat	aat	cag	agc	tgg	aac	tcg	tcg	192
Leu	Gly	Cys	Arg	Ala	Ser	Met	Ser	Asp	Asn	Gln	Ser	Trp	Asn	Ser	Ser	
	50					55				60						

ggc	tcg	gag	gag	gat	cca	gag	acg	gag	tct	ggg	ccg	cct	gtg	gag	cgc	240
Gly	Ser	Glu	Glu	Asp	Pro	Glu	Thr	Glu	Ser	Gly	Pro	Pro	Val	Glu	Arg	
65					70					75					80	

tgc	ggg	gtc	ctc	agt	aag	tgg	aca	aac	tac	att	cat	ggg	tgg	cag	gat	288
Cys	Gly	Val	Leu	Ser	Lys	Trp	Thr	Asn	Tyr	Ile	His	Gly	Trp	Gln	Asp	
				85					90					95		

cgt	tgg	gta	gtt	ttg	aaa	aat	aat	gct	ctg	agt	tac	tac	aaa	tct	gaa	336
Arg	Trp	Val	Val	Leu	Lys	Asn	Asn	Ala	Leu	Ser	Tyr	Tyr	Lys	Ser	Glu	
			100					105					110			

gat	gaa	aca	gag	tat	ggc	tgc	aga	gga	tcc	atc	tgt	ctt	agc	aag	gct	384
Asp	Glu	Thr	Glu	Tyr	Gly	Cys	Arg	Gly	Ser	Ile	Cys	Leu	Ser	Lys	Ala	
			115				120					125				

gtc	atc	aca	cct	cac	gat	ttt	gat	gaa	tgt	cga	ttt	gat	att	agt	gta	432
Val	Ile	Thr	Pro	His	Asp	Phe	Asp	Glu	Cys	Arg	Phe	Asp	Ile	Ser	Val	
	130					135					140					

aat	gat	agt	gtt	tgg	tat	ctt	cgt	gct	cag	gat	cca	gat	cat	aga	cag	480
Asn	Asp	Ser	Val	Trp	Tyr	Leu	Arg	Ala	Gln	Asp	Pro	Asp	His	Arg	Gln	
145					150				155						160	

caa	tgg	ata	gat	gcc	att	gaa	cag	cac	aag	act	gaa	tct	gga	tat	gga	528
Gln	Trp	Ile	Asp	Ala	Ile	Glu	Gln	His	Lys	Thr	Glu	Ser	Gly	Tyr	Gly	
				165					170					175		

tct	gaa	tcc	agc	ttg	cgt	cga	cat	ggc	tca	atg	gtg	tcc	ctg	gtg	tct	576
Ser	Glu	Ser	Ser	Leu	Arg	Arg	His	Gly	Ser	Met	Val	Ser	Leu	Val	Ser	
			180					185					190			

gga gca agt ggc tac tct gca aca tcc acc tct tca ttc aag aaa ggc Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser Ser Phe Lys Lys Gly 195 200 205	624
cac agt tta cgt gag aag ttg gct gaa atg gaa aca ttt aga gac atc His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu Thr Phe Arg Asp Ile 210 215 220	672
tta tgt aga caa gtt gac acg cta cag aag tac ttt gat gcc tgt gct Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Tyr Phe Asp Ala Cys Ala 225 230 235 240	720
gat gct gtc tct aag gat gaa ctt caa agg gat aaa gtg gta gaa gat Asp Ala Val Ser Lys Asp Glu Leu Gln Arg Asp Lys Val Val Glu Asp 245 250 255	768
gat gaa gat gac ttt cct aca acg cgt tct gat ggt gac ttc ttg cat Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp Gly Asp Phe Leu His 260 265 270	816
agt acc aac ggc aat aaa gaa aag tta ttt cca cat gtg aca cca aaa Ser Thr Asn Gly Asn Lys Glu Lys Leu Phe Pro His Val Thr Pro Lys 275 280 285	864
gga att aat ggt ata gac ttt aaa ggg gaa gcg ata act ttt aaa gca Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala Ile Thr Phe Lys Ala 290 295 300	912
act act gct gga atc ctt gca aca ctt tct cat tgt att gaa cta atg Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu Met 305 310 315 320	960
gtt aaa cgt gag gac agc tgg cag aag aga ctg gat aag gaa act gag Val Lys Arg Glu Asp Ser Trp Gln Lys Arg Leu Asp Lys Glu Thr Glu 325 330 335	1008
aag aaa aga aga aca gag gaa gca tat aaa aat gca atg aca gaa ctt Lys Lys Arg Arg Thr Glu Glu Ala Tyr Lys Asn Ala Met Thr Glu Leu 340 345 350	1056
aag aaa aaa tcc cac ttt gga gga cca gat tat gaa gaa ggc cct aac Lys Lys Lys Ser His Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro Asn 355 360 365	1104
agt ctg att aat gaa gaa gag ttc ttt gat gct gtt gaa gct gct ctt Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala Leu 370 375 380	1152
gac aga caa gat aaa ata gaa gaa cag tca cag agt gaa aag gtg aga Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val Arg 385 390 395 400	1200
tta cat tgg cct aca tcc ttg ccc tct gga gat gcc ttt tct tct gtg Leu His Trp Pro Thr Ser Leu Pro Ser Gly Asp Ala Phe Ser Ser Val 405 410 415	1248

ggg aca cat aga ttt gtc caa aag gtt gaa gag atg gtg cag aac cac Gly Thr His Arg Phe Val Gln Lys Val Glu Glu Met Val Gln Asn His 420 425 430	1296
atg act tac tca tta cag gat gta ggc gga gat gcc aat tgg cag ttg Met Thr Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala Asn Trp Gln Leu 435 440 445	1344
gtt gta gaa gaa gga gaa atg aag gta tac aga aga gaa gta gaa gaa Val Val Glu Glu Gly Glu Met Lys Val Tyr Arg Arg Glu Val Glu Glu 450 455 460	1392
aat ggg att gtt ctg gat cct tta aaa gct acc cat gca gtt aaa ggc Asn Gly Ile Val Leu Asp Pro Leu Lys Ala Thr His Ala Val Lys Gly 465 470 475 480	1440
gtc aca gga cat gaa gtc tgc aat tat ttc tgg aat gtt gac gtt cgc Val Thr Gly His Glu Val Cys Asn Tyr Phe Trp Asn Val Asp Val Arg 485 490 495	1488
aat gac tgg gaa aca act ata gaa aac ttt cat gtg gtg gaa aca tta Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe His Val Val Glu Thr Leu 500 505 510	1536
gct gat aat gca atc atc att tat caa aca cac aag agg gtg tgg cct Ala Asp Asn Ala Ile Ile Ile Tyr Gln Thr His Lys Arg Val Trp Pro 515 520 525	1584
gct tct cag cga gac gta tta tat ctt tct gtc att cga aag ata cca Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser Val Ile Arg Lys Ile Pro 530 535 540	1632
gcc ttg act gaa aat gac cct gaa act tgg ata gtt tgt aat ttt tct Ala Leu Thr Glu Asn Asp Pro Glu Thr Trp Ile Val Cys Asn Phe Ser 545 550 555 560	1680
gtg gat cat gac agt gct cct cta aac aac cga tgt gtc cgt gcc aaa Val Asp His Asp Ser Ala Pro Leu Asn Asn Arg Cys Val Arg Ala Lys 565 570 575	1728
ata aat gtt gct atg att tgt caa acc ttg gta agc cca cca gag gga Ile Asn Val Ala Met Ile Cys Gln Thr Leu Val Ser Pro Pro Glu Gly 580 585 590	1776
aac cag gaa att agc agg gac aac att cta tgc aag att aca tat gta Asn Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val 595 600 605	1824
gct aat gtg aac cct gga gga tgg gca cca gcc tca gtg tta agg gca Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val Leu Arg Ala 610 615 620	1872
gtg gca aag cga gag tat cct aaa ttt cta aaa cgt ttt act tct tac Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys Arg Phe Thr Ser Tyr 625 630 635 640	1920
gtc caa gaa aaa act gca gga aag cct att ttg ttc tag	1959

Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe
645 650

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Leu Gly Ala Ser Ser Gly Ala Ala Glu Gly Ala Gly Ala Gly Leu Leu
35 40 45

Leu Gly Cys Arg Ala Ser Met Ser Asp Asn Gln Ser Trp Asn Ser Ser
50 55 60

Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly Pro Pro Val Glu Arg
65 70 75 80

Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile His Gly Trp Gln Asp
85 90 95

Arg Trp Val Val Leu Lys Asn Asn Ala Leu Ser Tyr Tyr Lys Ser Glu
100 105 110

Asp Glu Thr Glu Tyr Gly Cys Arg Gly Ser Ile Cys Leu Ser Lys Ala
115 120 125

Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg Phe Asp Ile Ser Val
130 135 140

Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp Pro Asp His Arg Gln
145 150 155 160

Gln Trp Ile Asp Ala Ile Glu Gln His Lys Thr Glu Ser Gly Tyr Gly
165 170 175

Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met Val Ser Leu Val Ser
180 185 190

Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser Ser Phe Lys Lys Gly
195 200 205

His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu Thr Phe Arg Asp Ile
210 215 220

Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Tyr Phe Asp Ala Cys Ala
225 230 235 240

Asp Ala Val Ser Lys Asp Glu Leu Gln Arg Asp Lys Val Val Glu Asp
245 250 255

Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp Gly Asp Phe Leu His
260 265 270

Ser Thr Asn Gly Asn Lys Glu Lys Leu Phe Pro His Val Thr Pro Lys
275 280 285

Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala Ile Thr Phe Lys Ala
290 295 300

Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu Met
305 310 315 320

Val Lys Arg Glu Asp Ser Trp Gln Lys Arg Leu Asp Lys Glu Thr Glu
325 330 335

Lys Lys Arg Arg Thr Glu Glu Ala Tyr Lys Asn Ala Met Thr Glu Leu
340 345 350

Lys Lys Lys Ser His Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro Asn
355 360 365

Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala Leu
370 375 380

Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val Arg
385 390 395 400

Leu His Trp Pro Thr Ser Leu Pro Ser Gly Asp Ala Phe Ser Ser Val
405 410 415

Gly Thr His Arg Phe Val Gln Lys Val Glu Glu Met Val Gln Asn His
420 425 430

Met Thr Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala Asn Trp Gln Leu
435 440 445

Val Val Glu Glu Gly Glu Met Lys Val Tyr Arg Arg Glu Val Glu Glu
450 455 460

Asn Gly Ile Val Leu Asp Pro Leu Lys Ala Thr His Ala Val Lys Gly
465 470 475 480

Val Thr Gly His Glu Val Cys Asn Tyr Phe Trp Asn Val Asp Val Arg
485 490 495

Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe His Val Val Glu Thr Leu
500 505 510

Ala Asp Asn Ala Ile Ile Ile Tyr Gln Thr His Lys Arg Val Trp Pro
515 520 525

Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser Val Ile Arg Lys Ile Pro
530 535 540

Ala Leu Thr Glu Asn Asp Pro Glu Thr Trp Ile Val Cys Asn Phe Ser
545 550 555 560

Val Asp His Asp Ser Ala Pro Leu Asn Asn Arg Cys Val Arg Ala Lys
565 570 575

Ile Asn Val Ala Met Ile Cys Gln Thr Leu Val Ser Pro Pro Glu Gly
580 585 590

Asn Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val
595 600 605

Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val Leu Arg Ala
610 615 620

Val Ala Lys Arg Glu Tyr Pro Lys ~~Phe Leu~~ Lys Arg Phe Thr Ser Tyr

625

630

635

640

Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe
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 tcc gct cgg tgt cag gcg cgg cgg cgg cgc ggc ggg cgg act tcg tcc 96
 Ser Ala Arg Cys Gln Ala Arg Arg Arg Gly Gly Arg Thr Ser Ser
 20 25 30
 ctc ctc ctg ctc ccc ccc aca ccg gag cgg gca ctc ttc gct tcg cca 144
 Leu Leu Leu Leu Pro Pro Thr Pro Glu Arg Ala Leu Phe Ala Ser Pro
 35 40 45
 tcc ccc gac cct tca ccc cga gga ctg ggc gcc tcc tcc ggc gca gct 192
 Ser Pro Asp Pro Ser Pro Arg Gly Leu Gly Ala Ser Ser Gly Ala Ala
 50 55 60
 gag gga gcg ggg gcc ggt ctc ctg ctc ggt tgt cga gcc tcc atg tcg 240
 Glu Gly Ala Gly Ala Gly Leu Leu Leu Gly Cys Arg Ala Ser Met Ser
 65 70 75 80
 gat aat cag agc tgg aac tcg tcg ggc tcg gag gag gat cca gag acg 288
 Asp Asn Gln Ser Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro Glu Thr
 85 90 95
 gag tct ggg ccg cct gtg gag cgc tgc ggg gtc ctc agt aag tgg aca 336
 Glu Ser Gly Pro Pro Val Glu Arg Cys Gly Val Leu Ser Lys Trp Thr
 100 105 110
 aac tac att cat ggg tgg cag gat cgt tgg gta gtt ttg aaa aat aat 384
 Asn Tyr Ile His Gly Trp Gln Asp Arg Trp Val Val Leu Lys Asn Asn
 115 120 125
 gct ctg agt tac tac aaa tct gaa gat gaa aca gag tat ggc tgc aga 432
 Ala Leu Ser Tyr Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly Cys Arg
 130 135 140

gga tcc atc tgt ctt agc aag gct gtc atc aca cct cac gat ttt gat	480
Gly Ser Ile Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe Asp	
145 150 155 160	
gaa tgt cga ttt gat att agt gta aat gat agt gtt tgg tat ctt cgt	528
Glu Cys Arg Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu Arg	
165 170 175	
gct cag gat cca gat cat aga cag caa tgg ata gat gcc att gaa cag	576
Ala Gln Asp Pro Asp His Arg Gln Gln Trp Ile Asp Ala Ile Glu Gln	
180 185 190	
cac aag act gaa tct gga tat gga tct gaa tcc agc ttg cgt cga cat	624
His Lys Thr Glu Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg Arg His	
195 200 205	
ggc tca atg gtg tcc ctg gtg tct gga gca agt ggc tac tct gca aca	672
Gly Ser Met Val Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser Ala Thr	
210 215 220	
tcc acc tct tca ttc aag aaa ggc cac agt tta cgt gag aag ttg gct	720
Ser Thr Ser Ser Phe Lys Lys Gly His Ser Leu Arg Glu Lys Leu Ala	
225 230 235 240	
gaa atg gaa aca ttt aga gac atc tta tgt aga caa gtt gac acg cta	768
Glu Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr Leu	
245 250 255	
cag aag tac ttt gat gcc tgt gct gat gct gtc tct aag gat gaa ctt	816
Gln Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser Lys Asp Glu Leu	
260 265 270	
caa agg gat aaa gtg gta gaa gat gat gaa gat gac ttt cct aca acg	864
Gln Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr Thr	
275 280 285	
cgt tct gat ggt gac ttc ttg cat agt acc aac ggc aat aaa gaa aag	912
Arg Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly Asn Lys Glu Lys	
290 295 300	
tta ttt cca cat gtg aca cca aaa gga att aat ggt ata gac ttt aaa	960
Leu Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe Lys	
305 310 315 320	
ggg gaa gcg ata act ttt aaa gca act act gct gga atc ctt gca aca	1008
Gly Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala Thr	
325 330 335	
ctt tct cat tgt att gaa cta atg gtt aaa cgt gag gac agc tgg cag	1056
Leu Ser His Cys Ile Glu Leu Met Val Lys Arg Glu Asp Ser Trp Gln	
340 345 350	
aag aga ctg gat aag gaa act gag aag aaa aga aga aca gag gaa gca	1104
Lys Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg Thr Glu Glu Ala	
355 360 365	
tat aaa aat gca atg aca gaa ctt aag aaa aaa tcc cac ttt gga gga	1152

Tyr	Lys	Asn	Ala	Met	Thr	Glu	Leu	Lys	Lys	Lys	Ser	His	Phe	Gly	Gly		
370						375					380						
cca	gat	tat	gaa	gaa	ggc	cct	aac	agt	ctg	att	aat	gaa	gaa	gag	ttc		1200
Pro	Asp	Tyr	Glu	Glu	Gly	Pro	Asn	Ser	Leu	Ile	Asn	Glu	Glu	Glu	Phe		
385					390				395						400		
ttt	gat	gct	gtt	gaa	gct	gct	ctt	gac	aga	caa	gat	aaa	ata	gaa	gaa		1248
Phe	Asp	Ala	Val	Glu	Ala	Ala	Leu	Asp	Arg	Gln	Asp	Lys	Ile	Glu	Glu		
				405				410						415			
cag	tca	cag	agt	gaa	aag	gtg	aga	tta	cat	tggt	cct	aca	tcc	ttg	ccc		1296
Gln	Ser	Gln	Ser	Glu	Lys	Val	Arg	Leu	His	Trp	Pro	Thr	Ser	Leu	Pro		
			420					425					430				
tct	gga	gat	gcc	ttt	tct	tct	gtg	ggg	aca	cat	aga	ttt	gtc	caa	aag		1344
Ser	Gly	Asp	Ala	Phe	Ser	Ser	Val	Gly	Thr	His	Arg	Phe	Val	Gln	Lys		
		435					440					445					
ccc	tat	agt	cgc	tct	tcc	tcc	atg	tct	tcc	att	gat	cta	gtc	agt	gcc		1392
Pro	Tyr	Ser	Arg	Ser	Ser	Ser	Met	Ser	Ser	Ile	Asp	Leu	Val	Ser	Ala		
	450					455				460							
tct	gat	gat	gtt	cac	aga	ttc	agc	tcc	cag	gtt	gaa	gag	atg	gtg	cag		1440
Ser	Asp	Asp	Val	His	Arg	Phe	Ser	Ser	Gln	Val	Glu	Glu	Met	Val	Gln		
465				470				475						480			
aac	cac	atg	act	tac	tca	tta	cag	gat	gta	ggc	gga	gat	gcc	aat	tggt		1488
Asn	His	Met	Thr	Tyr	Ser	Leu	Gln	Asp	Val	Gly	Gly	Asp	Ala	Asn	Trp		
			485					490					495				
cag	ttg	gtt	gta	gaa	gaa	gga	gaa	atg	aag	gta	tac	aga	aga	gaa	gta		1536
Gln	Leu	Val	Val	Glu	Glu	Gly	Glu	Met	Lys	Val	Tyr	Arg	Arg	Glu	Val		
		500						505					510				
gaa	gaa	aat	ggg	att	gtt	ctg	gat	cct	tta	aaa	gct	acc	cat	gca	gtt		1584
Glu	Glu	Asn	Gly	Ile	Val	Leu	Asp	Pro	Leu	Lys	Ala	Thr	His	Ala	Val		
		515				520						525					
aaa	ggc	gtc	aca	gga	cat	gaa	gtc	tgc	aat	tat	ttc	tggt	aat	gtt	gac		1632
Lys	Gly	Val	Thr	Gly	His	Glu	Val	Cys	Asn	Tyr	Phe	Trp	Asn	Val	Asp		
	530					535					540						
gtt	cgc	aat	gac	tggt	gaa	aca	act	ata	gaa	aac	ttt	cat	gtg	gtg	gaa		1680
Val	Arg	Asn	Asp	Trp	Glu	Thr	Thr	Ile	Glu	Asn	Phe	His	Val	Val	Glu		
545					550					555					560		
aca	tta	gct	gat	aat	gca	atc	atc	att	tat	caa	aca	cac	aag	agg	gtg		1728
Thr	Leu	Ala	Asp	Asn	Ala	Ile	Ile	Ile	Tyr	Gln	Thr	His	Lys	Arg	Val		
				565				570						575			
tggt	cct	gct	tct	cag	cga	gac	gta	tta	tat	ctt	tct	gtc	att	cga	aag		1776
Trp	Pro	Ala	Ser	Gln	Arg	Asp	Val	Leu	Tyr	Leu	Ser	Val	Ile	Arg	Lys		
			580					585					590				
ata	cca	gcc	ttg	act	gaa	aat	gac	cct	gaa	act	tggt	ata	gtt	tgt	aat		1824
Ile	Pro	Ala	Leu	Thr	Glu	Asn	Asp	Pro	Glu	Thr	Trp	Ile	Val	Cys	Asn		

595	600	605	
ttt tct gtg gat cat gac agt gct cct cta aac aac cga tgt gtc cgt			1872
Phe Ser Val Asp His Asp Ser Ala Pro Leu Asn Asn Arg Cys Val Arg			
610	615	620	
gcc aaa ata aat gtt gct atg att tgt caa acc ttg gta agc cca cca			1920
Ala Lys Ile Asn Val Ala Met Ile Cys Gln Thr Leu Val Ser Pro Pro			
625	630	635	640
gag gga aac cag gaa att agc agg gac aac att cta tgc aag att aca			1968
Glu Gly Asn Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile Thr			
645	650	655	
tat gta gct aat gtg aac cct gga gga tgg gca cca gcc tca gtg tta			2016
Tyr Val Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val Leu			
660	665	670	
agg gca gtg gca aag cga gag tat cct aaa ttt cta aaa cgt ttt act			2064
Arg Ala Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys Arg Phe Thr			
675	680	685	
tct tac gtc caa gaa aaa act gca gga aag cct att ttg ttc tag			2109
Ser Tyr Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe			
690	695	700	

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20 25 30

Leu Leu Leu Leu Pro Pro Thr Pro Glu Arg Ala Leu Phe Ala Ser Pro
35 40 45

Ser Pro Asp Pro Ser Pro Arg Gly Leu Gly Ala Ser Ser Gly Ala Ala
50 55 60

Glu Gly Ala Gly Ala Gly Leu Leu Leu Gly Cys Arg Ala Ser Met Ser
65 70 75 80

Asp Asn Gln Ser Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro Glu Thr
85 90 95

Glu Ser Gly Pro Pro Val Glu Arg Cys Gly Val Leu Ser Lys Trp Thr
100 105 110

Asn Tyr Ile His Gly Trp Gln Asp Arg Trp Val Val Leu Lys Asn Asn
115 120 125

Ala Leu Ser Tyr Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly Cys Arg
130 135 140

Gly Ser Ile Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe Asp
145 150 155 160

Glu Cys Arg Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu Arg
165 170 175

Ala Gln Asp Pro Asp His Arg Gln Gln Trp Ile Asp Ala Ile Glu Gln
180 185 190

His Lys Thr Glu Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg Arg His
195 200 205

Gly Ser Met Val Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser Ala Thr
210 215 220

Ser Thr Ser Ser Phe Lys Lys Gly His Ser Leu Arg Glu Lys Leu Ala
225 230 235 240

Glu Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr Leu
245 250 255

Gln Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser Lys Asp Glu Leu
260 265 270

Gln Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr Thr
275 280 285

Arg Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly Asn Lys Glu Lys
290 295 300

Leu Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe Lys

305

310

315

320

Gly Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala Thr
 325 330 335

Leu Ser His Cys Ile Glu Leu Met Val Lys Arg Glu Asp Ser Trp Gln
 340 345 350

Lys Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg Thr Glu Glu Ala
 355 360 365

Tyr Lys Asn Ala Met Thr Glu Leu Lys Lys Lys Ser His Phe Gly Gly
 370 375 380

Pro Asp Tyr Glu Glu Gly Pro Asn Ser Leu Ile Asn Glu Glu Glu Phe
 385 390 395 400

Phe Asp Ala Val Glu Ala Ala Leu Asp Arg Gln Asp Lys Ile Glu Glu
 405 410 415

Gln Ser Gln Ser Glu Lys Val Arg Leu His Trp Pro Thr Ser Leu Pro
 420 425 430

Ser Gly Asp Ala Phe Ser Ser Val Gly Thr His Arg Phe Val Gln Lys
 435 440 445

Pro Tyr Ser Arg Ser Ser Ser Met Ser Ser Ile Asp Leu Val Ser Ala
 450 455 460

Ser Asp Asp Val His Arg Phe Ser Ser Gln Val Glu Glu Met Val Gln
 465 470 475 480

Asn His Met Thr Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala Asn Trp
 485 490 495

Gln Leu Val Val Glu Glu Gly Glu Met Lys Val Tyr Arg Arg Glu Val
 500 505 510

Glu Glu Asn Gly Ile Val Leu Asp Pro Leu Lys Ala Thr His Ala Val
 515 520 525

Lys Gly Val Thr Gly His Glu Val Cys Asn Tyr Phe Trp Asn Val Asp
 530 535 540

Val Arg Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe His Val Val Glu
545 550 555 560

Thr Leu Ala Asp Asn Ala Ile Ile Ile Tyr Gln Thr His Lys Arg Val
565 570 575

Trp Pro Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser Val Ile Arg Lys
580 585 590

Ile Pro Ala Leu Thr Glu Asn Asp Pro Glu Thr Trp Ile Val Cys Asn
595 600 605

Phe Ser Val Asp His Asp Ser Ala Pro Leu Asn Asn Arg Cys Val Arg
610 615 620

Ala Lys Ile Asn Val Ala Met Ile Cys Gln Thr Leu Val Ser Pro Pro
625 630 635 640

Glu Gly Asn Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile Thr
645 650 655

Tyr Val Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val Leu
660 665 670

Arg Ala Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys Arg Phe Thr
675 680 685

Ser Tyr Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe
690 695 700

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tcc	gct	cgg	tgt	cag	gcg	cgg	cgg	cgg	cgc	ggc	ggg	cgg	act	tcg	tcc		96
Ser	Ala	Arg	Cys	Gln	Ala	Arg	Arg	Arg	Arg	Gly	Gly	Arg	Thr	Ser	Ser		
			20					25					30				
ctc	ctc	ctg	ctc	ccc	ccc	aca	ccg	gag	cgg	gca	ctc	ttc	gct	tcg	cca		144
Leu	Leu	Leu	Leu	Pro	Pro	Thr	Pro	Glu	Arg	Ala	Leu	Phe	Ala	Ser	Pro		
			35				40					45					
tcc	ccc	gac	cct	tca	ccc	cga	gga	ctg	ggc	gcc	tcc	tcc	ggc	gca	gct		192
Ser	Pro	Asp	Pro	Ser	Pro	Arg	Gly	Leu	Gly	Ala	Ser	Ser	Gly	Ala	Ala		
	50					55					60						
gag	gga	gcg	ggg	gcc	ggg	ctc	ctg	ctc	ggg	tgt	cga	gcc	tcc	atg	tcg		240
Glu	Gly	Ala	Gly	Ala	Gly	Leu	Leu	Leu	Gly	Cys	Arg	Ala	Ser	Met	Ser		
65					70				75						80		
gat	aat	cag	agc	tgg	aac	tcg	tcg	ggc	tcg	gag	gag	gat	cca	gag	acg		288
Asp	Asn	Gln	Ser	Trp	Asn	Ser	Ser	Gly	Ser	Glu	Glu	Asp	Pro	Glu	Thr		
			85					90					95				
gag	tct	ggg	ccg	cct	gtg	gag	cgc	tgc	ggg	gtc	ctc	agt	aag	tgg	aca		336
Glu	Ser	Gly	Pro	Pro	Val	Glu	Arg	Cys	Gly	Val	Leu	Ser	Lys	Trp	Thr		
			100					105					110				
aac	tac	att	cat	ggg	tgg	cag	gat	cgt	tgg	gta	gtt	ttg	aaa	aat	aat		384
Asn	Tyr	Ile	His	Gly	Trp	Gln	Asp	Arg	Trp	Val	Val	Leu	Lys	Asn	Asn		
			115					120				125					
gct	ctg	agt	tac	tac	aaa	tct	gaa	gat	gaa	aca	gag	tat	ggc	tgc	aga		432
Ala	Leu	Ser	Tyr	Tyr	Lys	Ser	Glu	Asp	Glu	Thr	Glu	Tyr	Gly	Cys	Arg		
			130					135				140					
gga	tcc	atc	tgt	ctt	agc	aag	gct	gtc	atc	aca	cct	cac	gat	ttt	gat		480
Gly	Ser	Ile	Cys	Leu	Ser	Lys	Ala	Val	Ile	Thr	Pro	His	Asp	Phe	Asp		
145					150				155						160		
gaa	tgt	cga	ttt	gat	att	agt	gta	aat	gat	agt	gtt	tgg	tat	ctt	cgt		528
Glu	Cys	Arg	Phe	Asp	Ile	Ser	Val	Asn	Asp	Ser	Val	Trp	Tyr	Leu	Arg		
				165					170					175			
gct	cag	gat	cca	gat	cat	aga	cag	caa	tgg	ata	gat	gcc	att	gaa	cag		576
Ala	Gln	Asp	Pro	Asp	His	Arg	Gln	Gln	Trp	Ile	Asp	Ala	Ile	Glu	Gln		
			180					185					190				
cac	aag	act	gaa	tct	gga	tat	gga	tct	gaa	tcc	agc	ttg	cgt	cga	cat		624
His	Lys	Thr	Glu	Ser	Gly	Tyr	Gly	Ser	Glu	Ser	Ser	Leu	Arg	Arg	His		
			195					200				205					
ggc	tca	atg	gtg	tcc	ctg	gtg	tct	gga	gca	agt	ggc	tac	tct	gca	aca		672
Gly	Ser	Met	Val	Ser	Leu	Val	Ser	Gly	Ala	Ser	Gly	Tyr	Ser	Ala	Thr		
	210						215				220						
tcc	acc	tct	tca	ttc	aag	aaa	ggc	cac	agt	tta	cgt	gag	aag	ttg	gct		720
Ser	Thr	Ser	Ser	Phe	Lys	Lys	Gly	His	Ser	Leu	Arg	Glu	Lys	Leu	Ala		

225	230	235	240	
gaa atg gaa aca ttt aga gac atc tta tgt aga caa gtt gac acg cta				768
Glu Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr Leu	245	250	255	
cag aag tac ttt gat gcc tgt gct gat gct gtc tct aag gat gaa ctt				816
Gln Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser Lys Asp Glu Leu	260	265	270	
caa agg gat aaa gtg gta gaa gat gat gaa gat gac ttt cct aca acg				864
Gln Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr Thr	275	280	285	
cgt tct gat ggt gac ttc ttg cat agt acc aac ggc aat aaa gaa aag				912
Arg Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly Asn Lys Glu Lys	290	295	300	
tta ttt cca cat gtg aca cca aaa gga att aat ggt ata gac ttt aaa				960
Leu Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe Lys	305	310	315	320
ggg gaa gcg ata act ttt aaa gca act act gct gga atc ctt gca aca				1008
Gly Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala Thr	325	330	335	
ctt tct cat tgt att gaa cta atg gtt aaa cgt gag gac agc tgg cag				1056
Leu Ser His Cys Ile Glu Leu Met Val Lys Arg Glu Asp Ser Trp Gln	340	345	350	
aag aga ctg gat aag gaa act gag aag aaa aga aga aca gag gaa gca				1104
Lys Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg Thr Glu Glu Ala	355	360	365	
tat aaa aat gca atg aca gaa ctt aag aaa aaa tcc cac ttt gga gga				1152
Tyr Lys Asn Ala Met Thr Glu Leu Lys Lys Lys Ser His Phe Gly Gly	370	375	380	
cca gat tat gaa gaa ggc cct aac agt ctg att aat gaa gaa gag ttc				1200
Pro Asp Tyr Glu Glu Gly Pro Asn Ser Leu Ile Asn Glu Glu Glu Phe	385	390	395	400
ttt gat gct gtt gaa gct gct ctt gac aga caa gat aaa ata gaa gaa				1248
Phe Asp Ala Val Glu Ala Ala Leu Asp Arg Gln Asp Lys Ile Glu Glu	405	410	415	
cag tca cag agt gaa aag gtg aga tta cat tgg cct aca tcc ttg ccc				1296
Gln Ser Gln Ser Glu Lys Val Arg Leu His Trp Pro Thr Ser Leu Pro	420	425	430	
tct gga gat gcc ttt tct tct gtg ggg aca cat aga ttt gtc caa aag				1344
Ser Gly Asp Ala Phe Ser Ser Val Gly Thr His Arg Phe Val Gln Lys	435	440	445	
gtt gaa gag atg gtg cag aac cac atg act tac tca tta cag gat gta				1392
Val Glu Glu Met Val Gln Asn His Met Thr Tyr Ser Leu Gln Asp Val	450	455	460	

ggc gga gat gcc aat tgg cag ttg gtt gta gaa gaa gga gaa atg aag Gly Gly Asp Ala Asn Trp Gln Leu Val Val Glu Glu Gly Glu Met Lys 465 470 475 480	1440
gta tac aga aga gaa gta gaa gaa aat ggg att gtt ctg gat cct tta Val Tyr Arg Arg Glu Val Glu Glu Asn Gly Ile Val Leu Asp Pro Leu 485 490 495	1488
aaa gct acc cat gca gtt aaa ggc gtc aca gga cat gaa gtc tgc aat Lys Ala Thr His Ala Val Lys Gly Val Thr Gly His Glu Val Cys Asn 500 505 510	1536
tat ttc tgg aat gtt gac gtt cgc aat gac tgg gaa aca act ata gaa Tyr Phe Trp Asn Val Asp Val Arg Asn Asp Trp Glu Thr Thr Ile Glu 515 520 525	1584
aac ttt cat gtg gtg gaa aca tta gct gat aat gca atc atc att tat Asn Phe His Val Val Glu Thr Leu Ala Asp Asn Ala Ile Ile Ile Tyr 530 535 540	1632
caa aca cac aag agg gtg tgg cct gct tct cag cga gac gta tta tat Gln Thr His Lys Arg Val Trp Pro Ala Ser Gln Arg Asp Val Leu Tyr 545 550 555 560	1680
ctt tct gtc att cga aag ata cca gcc ttg act gaa aat gac cct gaa Leu Ser Val Ile Arg Lys Ile Pro Ala Leu Thr Glu Asn Asp Pro Glu 565 570 575	1728
act tgg ata gtt tgt aat ttt tct gtg gat cat gac agt gct cct cta Thr Trp Ile Val Cys Asn Phe Ser Val Asp His Asp Ser Ala Pro Leu 580 585 590	1776
aac aac cga tgt gtc cgt gcc aaa ata aat gtt gct atg att tgt caa Asn Asn Arg Cys Val Arg Ala Lys Ile Asn Val Ala Met Ile Cys Gln 595 600 605	1824
acc ttg gta agc cca cca gag gga aac cag gaa att agc agg gac aac Thr Leu Val Ser Pro Pro Glu Gly Asn Gln Glu Ile Ser Arg Asp Asn 610 615 620	1872
att cta tgc aag att aca tat gta gct aat gtg aac cct gga gga tgg Ile Leu Cys Lys Ile Thr Tyr Val Ala Asn Val Asn Pro Gly Gly Trp 625 630 635 640	1920
gca cca gcc tca gtg tta agg gca gtg gca aag cga gag tat cct aaa Ala Pro Ala Ser Val Leu Arg Ala Val Ala Lys Arg Glu Tyr Pro Lys 645 650 655	1968
ttt cta aaa cgt ttt act tct tac gtc caa gaa aaa act gca gga aag Phe Leu Lys Arg Phe Thr Ser Tyr Val Gln Glu Lys Thr Ala Gly Lys 660 665 670	2016
cct att ttg ttc tag Pro Ile Leu Phe 675	2031

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Leu Leu Leu Leu Pro Pro Thr Pro Glu Arg Ala Leu Phe Ala Ser Pro
35 40 45

Ser Pro Asp Pro Ser Pro Arg Gly Leu Gly Ala Ser Ser Gly Ala Ala
50 55 60

Glu Gly Ala Gly Ala Gly Leu Leu Leu Gly Cys Arg Ala Ser Met Ser
65 70 75 80

Asp Asn Gln Ser Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro Glu Thr
85 90 95

Glu Ser Gly Pro Pro Val Glu Arg Cys Gly Val Leu Ser Lys Trp Thr
100 105 110

Asn Tyr Ile His Gly Trp Gln Asp Arg Trp Val Val Leu Lys Asn Asn
115 120 125

Ala Leu Ser Tyr Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly Cys Arg
130 135 140

Gly Ser Ile Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe Asp
145 150 155 160

Glu Cys Arg Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu Arg
165 170 175

Ala Gln Asp Pro Asp His Arg Gln Gln Trp Ile Asp Ala Ile Glu Gln
180 185 190

His Lys Thr Glu Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg Arg His
195 200 205

Gly Ser Met Val Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser Ala Thr
210 215 220

Ser Thr Ser Ser Phe Lys Lys Gly His Ser Leu Arg Glu Lys Leu Ala
225 230 235 240

Glu Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr Leu
245 250 255

Gln Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser Lys Asp Glu Leu
260 265 270

Gln Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr Thr
275 280 285

Arg Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly Asn Lys Glu Lys
290 295 300

Leu Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe Lys
305 310 315 320

Gly Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala Thr
325 330 335

Leu Ser His Cys Ile Glu Leu Met Val Lys Arg Glu Asp Ser Trp Gln
340 345 350

Lys Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg Thr Glu Glu Ala
355 360 365

Tyr Lys Asn Ala Met Thr Glu Leu Lys Lys Lys Ser His Phe Gly Gly
370 375 380

Pro Asp Tyr Glu Glu Gly Pro Asn Ser Leu Ile Asn Glu Glu Glu Phe
385 390 395 400

Phe Asp Ala Val Glu Ala Ala Leu Asp Arg Gln Asp Lys Ile Glu Glu
405 410 415

Gln Ser Gln Ser Glu Lys Val Arg Leu His Trp Pro Thr Ser Leu Pro
420 425 430

Ser Gly Asp Ala Phe Ser Ser Val Gly Thr His Arg Phe Val Gln Lys
435 440 445

Val Glu Glu Met Val Gln Asn His Met Thr Tyr Ser Leu Gln Asp Val
450 455 460

Gly Gly Asp Ala Asn Trp Gln Leu Val Val Glu Glu Gly Glu Met Lys
465 470 475 480

Val Tyr Arg Arg Glu Val Glu Glu Asn Gly Ile Val Leu Asp Pro Leu
485 490 495

Lys Ala Thr His Ala Val Lys Gly Val Thr Gly His Glu Val Cys Asn
500 505 510

Tyr Phe Trp Asn Val Asp Val Arg Asn Asp Trp Glu Thr Thr Ile Glu
515 520 525

Asn Phe His Val Val Glu Thr Leu Ala Asp Asn Ala Ile Ile Ile Tyr
530 535 540

Gln Thr His Lys Arg Val Trp Pro Ala Ser Gln Arg Asp Val Leu Tyr
545 550 555 560

Leu Ser Val Ile Arg Lys Ile Pro Ala Leu Thr Glu Asn Asp Pro Glu
565 570 575

Thr Trp Ile Val Cys Asn Phe Ser Val Asp His Asp Ser Ala Pro Leu
580 585 590

Asn Asn Arg Cys Val Arg Ala Lys Ile Asn Val Ala Met Ile Cys Gln
595 600 605

Thr Leu Val Ser Pro Pro Glu Gly Asn Gln Glu Ile Ser Arg Asp Asn
610 615 620

Ile Leu Cys Lys Ile Thr Tyr Val Ala Asn Val Asn Pro Gly Gly Trp
625 630 635 640

Ala Pro Ala Ser Val Leu Arg Ala Val Ala Lys Arg Glu Tyr Pro Lys
645 650 655

Phe Leu Lys Arg Phe Thr Ser Tyr Val Gln Glu Lys Thr Ala Gly Lys
660 665 670

Pro Ile Leu Phe
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gtc acg gcg acg gcg gcg gcg gct gac ggc tgg aag ggt agg ctt cct 96
Val Thr Ala Thr Ala Ala Ala Asp Gly Trp Lys Gly Arg Leu Pro
20 25 30
tca ccg ctc gtc ctc ctt cct cgc tcc gct cgg tgt cag gcg cgg cgg 144
Ser Pro Leu Val Leu Leu Pro Arg Ser Ala Arg Cys Gln Ala Arg Arg
35 40 45
cgg cgc ggc ggg cgg act tcg tcc ctc ctc ctg ctc ccc ccc aca ccg 192
Arg Arg Gly Gly Arg Thr Ser Ser Leu Leu Leu Leu Pro Pro Thr Pro
50 55 60
gag cgg gca ctc ttc gct tcg cca tcc ccc gac cct tca ccc cga gga 240
Glu Arg Ala Leu Phe Ala Ser Pro Ser Pro Asp Pro Ser Pro Arg Gly
65 70 75 80
ctg ggc gcc tcc tcc ggc gca gct gag gga gcg ggg gcc ggt ctc ctg 288
Leu Gly Ala Ser Ser Gly Ala Ala Glu Gly Ala Gly Ala Gly Leu Leu
85 90 95
ctc ggt tgt cga gcc tcc atg tcg gat aat cag agc tgg aac tcg tcg 336
Leu Gly Cys Arg Ala Ser Met Ser Asp Asn Gln Ser Trp Asn Ser Ser
100 105 110
ggc tcg gag gag gat cca gag acg gag tct ggg ccg cct gtg gag cgc 384
Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly Pro Pro Val Glu Arg
115 120 125

tgc ggg gtc ctc agt aag tgg aca aac tac att cat ggg tgg cag gat Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile His Gly Trp Gln Asp 130 135 140	432
cgt tgg gta gtt ttg aaa aat aat gct ctg agt tac tac aaa tct gaa Arg Trp Val Val Leu Lys Asn Asn Ala Leu Ser Tyr Tyr Lys Ser Glu 145 150 155 160	480
gat gaa aca gag tat ggc tgc aga gga tcc atc tgt ctt agc aag gct Asp Glu Thr Glu Tyr Gly Cys Arg Gly Ser Ile Cys Leu Ser Lys Ala 165 170 175	528
gtc atc aca cct cac gat ttt gat gaa tgt cga ttt gat att agt gta Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg Phe Asp Ile Ser Val 180 185 190	576
aat gat agt gtt tgg tat ctt cgt gct cag gat cca gat cat aga cag Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp Pro Asp His Arg Gln 195 200 205	624
caa tgg ata gat gcc att gaa cag cac aag act gaa tct gga tat gga Gln Trp Ile Asp Ala Ile Glu Gln His Lys Thr Glu Ser Gly Tyr Gly 210 215 220	672
tct gaa tcc agc ttg cgt cga cat ggc tca atg gtg tcc ctg gtg tct Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met Val Ser Leu Val Ser 225 230 235 240	720
gga gca agt ggc tac tct gca aca tcc acc tct tca ttc aag aaa ggc Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser Ser Phe Lys Lys Gly 245 250 255	768
cac agt tta cgt gag aag ttg gct gaa atg gaa aca ttt aga gac atc His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu Thr Phe Arg Asp Ile 260 265 270	816
tta tgt aga caa gtt gac acg cta cag aag tac ttt gat gcc tgt gct Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Tyr Phe Asp Ala Cys Ala 275 280 285	864
gat gct gtc tct aag gat gaa ctt caa agg gat aaa gtg gta gaa gat Asp Ala Val Ser Lys Asp Glu Leu Gln Arg Asp Lys Val Val Glu Asp 290 295 300	912
gat gaa gat gac ttt cct aca acg cgt tct gat ggt gac ttc ttg cat Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp Gly Asp Phe Leu His 305 310 315 320	960
agt acc aac ggc aat aaa gaa aag tta ttt cca cat gtg aca cca aaa Ser Thr Asn Gly Asn Lys Glu Lys Leu Phe Pro His Val Thr Pro Lys 325 330 335	1008
gga att aat ggt ata gac ttt aaa ggg gaa gcg ata act ttt aaa gca Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala Ile Thr Phe Lys Ala 340 345 350	1056

act act gct gga atc ctt gca aca ctt tct cat tgt att gaa cta atg	1104
Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu Met	
355 360 365	
gtt aaa cgt gag gac agc tgg cag aag aga ctg gat aag gaa act gag	1152
Val Lys Arg Glu Asp Ser Trp Gln Lys Arg Leu Asp Lys Glu Thr Glu	
370 375 380	
aag aaa aga aga aca gag gaa gca tat aaa aat gca atg aca gaa ctt	1200
Lys Lys Arg Arg Thr Glu Glu Ala Tyr Lys Asn Ala Met Thr Glu Leu	
385 390 395 400	
aag aaa aaa tcc cac ttt gga gga cca gat tat gaa gaa ggc cct aac	1248
Lys Lys Lys Ser His Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro Asn	
405 410 415	
agt ctg att aat gaa gaa gag ttc ttt gat gct gtt gaa gct gct ctt	1296
Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala Leu	
420 425 430	
gac aga caa gat aaa ata gaa gaa cag tca cag agt gaa aag gtg aga	1344
Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val Arg	
435 440 445	
tta cat tgg cct aca tcc ttg ccc tct gga gat gcc ttt tct tct gtg	1392
Leu His Trp Pro Thr Ser Leu Pro Ser Gly Asp Ala Phe Ser Ser Val	
450 455 460	
ggg aca cat aga ttt gtc caa aag ccc tat agt cgc tct tcc tcc atg	1440
Gly Thr His Arg Phe Val Gln Lys Pro Tyr Ser Arg Ser Ser Met	
465 470 475 480	
tct tcc att gat cta gtc agt gcc tct gat gat gtt cac aga ttc agc	1488
Ser Ser Ile Asp Leu Val Ser Ala Ser Asp Asp Val His Arg Phe Ser	
485 490 495	
tcc cag gtt gaa gag atg gtg cag aac cac atg act tac tca tta cag	1536
Ser Gln Val Glu Glu Met Val Gln Asn His Met Thr Tyr Ser Leu Gln	
500 505 510	
gat gta ggc gga gat gcc aat tgg cag ttg gtt gta gaa gaa gga gaa	1584
Asp Val Gly Gly Asp Ala Asn Trp Gln Leu Val Val Glu Glu Gly Glu	
515 520 525	
atg aag gta tac aga aga gaa gta gaa gaa aat ggg att gtt ctg gat	1632
Met Lys Val Tyr Arg Arg Glu Val Glu Glu Asn Gly Ile Val Leu Asp	
530 535 540	
cct tta aaa gct acc cat gca gtt aaa ggc gtc aca gga cat gaa gtc	1680
Pro Leu Lys Ala Thr His Ala Val Lys Gly Val Thr Gly His Glu Val	
545 550 555 560	
tgc aat tat ttc tgg aat gtt gac gtt cgc aat gac tgg gaa aca act	1728
Cys Asn Tyr Phe Trp Asn Val Asp Val Arg Asn Asp Trp Glu Thr Thr	
565 570 575	
ata gaa aac ttt cat gtg gtg gaa aca tta gct gat aat gca atc atc	1776

Ile Glu Asn Phe His Val Val Glu Thr Leu Ala Asp Asn Ala Ile Ile
580 585 590

att tat caa aca cac aag agg gtg tgg cct gct tct cag cga gac gta 1824
Ile Tyr Gln Thr His Lys Arg Val Trp Pro Ala Ser Gln Arg Asp Val
595 600 605

tta tat ctt tct gtc att cga aag ata cca gcc ttg act gaa aat gac 1872
Leu Tyr Leu Ser Val Ile Arg Lys Ile Pro Ala Leu Thr Glu Asn Asp
610 615 620

cct gaa act tgg ata gtt tgt aat ttt tct gtg gat cat gac agt gct 1920
Pro Glu Thr Trp Ile Val Cys Asn Phe Ser Val Asp His Asp Ser Ala
625 630 635 640

cct cta aac aac cga tgt gtc cgt gcc aaa ata aat gtt gct atg att 1968
Pro Leu Asn Asn Arg Cys Val Arg Ala Lys Ile Asn Val Ala Met Ile
645 650 655

tgt caa acc ttg gta agc cca cca gag gga aac cag gaa att agc agg 2016
Cys Gln Thr Leu Val Ser Pro Pro Glu Gly Asn Gln Glu Ile Ser Arg
660 665 670

gac aac att cta tgc aag att aca tat gta gct aat gtg aac cct gga 2064
Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val Ala Asn Val Asn Pro Gly
675 680 685

gga tgg gca cca gcc tca gtg tta agg gca gtg gca aag cga gag tat 2112
Gly Trp Ala Pro Ala Ser Val Leu Arg Ala Val Ala Lys Arg Glu Tyr
690 695 700

cct aaa ttt cta aaa cgt ttt act tct tac gtc caa gaa aaa act gca 2160
Pro Lys Phe Leu Lys Arg Phe Thr Ser Tyr Val Gln Glu Lys Thr Ala
705 710 715 720

gga aag cct att ttg ttc tag 2181
Gly Lys Pro Ile Leu Phe
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Ser Pro Leu Val Leu Leu Pro Arg Ser Ala Arg Cys Gln Ala Arg Arg
35 40 45

Arg Arg Gly Gly Arg Thr Ser Ser Leu Leu Leu Leu Pro Pro Thr Pro
50 55 60

Glu Arg Ala Leu Phe Ala Ser Pro Ser Pro Asp Pro Ser Pro Arg Gly
65 70 75 80

Leu Gly Ala Ser Ser Gly Ala Ala Glu Gly Ala Gly Ala Gly Leu Leu
85 90 95

Leu Gly Cys Arg Ala Ser Met Ser Asp Asn Gln Ser Trp Asn Ser Ser
100 105 110

Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly Pro Pro Val Glu Arg
115 120 125

Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile His Gly Trp Gln Asp
130 135 140

Arg Trp Val Val Leu Lys Asn Asn Ala Leu Ser Tyr Tyr Lys Ser Glu
145 150 155 160

Asp Glu Thr Glu Tyr Gly Cys Arg Gly Ser Ile Cys Leu Ser Lys Ala
165 170 175

Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg Phe Asp Ile Ser Val
180 185 190

Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp Pro Asp His Arg Gln
195 200 205

Gln Trp Ile Asp Ala Ile Glu Gln His Lys Thr Glu Ser Gly Tyr Gly
210 215 220

Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met Val Ser Leu Val Ser
225 230 235 240

Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser Ser Phe Lys Lys Gly
245 250 255

His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu Thr Phe Arg Asp Ile
260 265 270

Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Tyr Phe Asp Ala Cys Ala
275 280 285

Asp Ala Val Ser Lys Asp Glu Leu Gln Arg Asp Lys Val Val Glu Asp
290 295 300

Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp Gly Asp Phe Leu His
305 310 315 320

Ser Thr Asn Gly Asn Lys Glu Lys Leu Phe Pro His Val Thr Pro Lys
325 330 335

Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala Ile Thr Phe Lys Ala
340 345 350

Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu Met
355 360 365

Val Lys Arg Glu Asp Ser Trp Gln Lys Arg Leu Asp Lys Glu Thr Glu
370 375 380

Lys Lys Arg Arg Thr Glu Glu Ala Tyr Lys Asn Ala Met Thr Glu Leu
385 390 395 400

Lys Lys Lys Ser His Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro Asn
405 410 415

Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala Leu
420 425 430

Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val Arg
435 440 445

Leu His Trp Pro Thr Ser Leu Pro Ser Gly Asp Ala Phe Ser Ser Val
450 455 460

Gly Thr His Arg Phe Val Gln Lys Pro Tyr Ser Arg Ser Ser Ser Met
465 470 475 480

Ser Ser Ile Asp Leu Val Ser Ala Ser Asp Asp Val His Arg Phe Ser

485

490

495

Ser Gln Val Glu Glu Met Val Gln Asn His Met Thr Tyr Ser Leu Gln
500 505 510

Asp Val Gly Gly Asp Ala Asn Trp Gln Leu Val Val Glu Glu Gly Glu
515 520 525

Met Lys Val Tyr Arg Arg Glu Val Glu Glu Asn Gly Ile Val Leu Asp
530 535 540

Pro Leu Lys Ala Thr His Ala Val Lys Gly Val Thr Gly His Glu Val
545 550 555 560

Cys Asn Tyr Phe Trp Asn Val Asp Val Arg Asn Asp Trp Glu Thr Thr
565 570 575

Ile Glu Asn Phe His Val Val Glu Thr Leu Ala Asp Asn Ala Ile Ile
580 585 590

Ile Tyr Gln Thr His Lys Arg Val Trp Pro Ala Ser Gln Arg Asp Val
595 600 605

Leu Tyr Leu Ser Val Ile Arg Lys Ile Pro Ala Leu Thr Glu Asn Asp
610 615 620

Pro Glu Thr Trp Ile Val Cys Asn Phe Ser Val Asp His Asp Ser Ala
625 630 635 640

Pro Leu Asn Asn Arg Cys Val Arg Ala Lys Ile Asn Val Ala Met Ile
645 650 655

Cys Gln Thr Leu Val Ser Pro Pro Glu Gly Asn Gln Glu Ile Ser Arg
660 665 670

Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val Ala Asn Val Asn Pro Gly
675 680 685

Gly Trp Ala Pro Ala Ser Val Leu Arg Ala Val Ala Lys Arg Glu Tyr
690 695 700

Pro Lys Phe Leu Lys Arg Phe Thr Ser Tyr Val Gln Glu Lys Thr Ala
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Gly Lys Pro Ile Leu Phe
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Val Thr Ala Thr Ala Ala Ala Ala Asp Gly Trp Lys Gly Arg Leu Pro
20 25 30
tca ccg ctc gtc ctc ctt cct cgc tcc gct cgg tgt cag gcg cgg cgg 144
Ser Pro Leu Val Leu Leu Pro Arg Ser Ala Arg Cys Gln Ala Arg Arg
35 40 45
cgg cgc ggc ggg cgg act tcg tcc ctc ctc ctg ctc ccc ccc aca ccg 192
Arg Arg Gly Gly Arg Thr Ser Ser Leu Leu Leu Leu Pro Pro Thr Pro
50 55 60
gag cgg gca ctc ttc gct tcg cca tcc ccc gac cct tca ccc cga gga 240
Glu Arg Ala Leu Phe Ala Ser Pro Ser Pro Asp Pro Ser Pro Arg Gly
65 70 75 80
ctg ggc gcc tcc tcc ggc gca gct gag gga gcg ggg gcc ggt ctc ctg 288
Leu Gly Ala Ser Ser Gly Ala Ala Glu Gly Ala Gly Ala Gly Leu Leu
85 90 95
ctc ggt tgt cga gcc tcc atg tcg gat aat cag agc tgg aac tcg tcg 336
Leu Gly Cys Arg Ala Ser Met Ser Asp Asn Gln Ser Trp Asn Ser Ser
100 105 110
ggc tcg gag gag gat cca gag acg gag tct ggg ccg cct gtg gag cgc 384
Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly Pro Pro Val Glu Arg
115 120 125
tgc ggg gtc ctc agt aag tgg aca aac tac att cat ggg tgg cag gat 432
Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile His Gly Trp Gln Asp
130 135 140
cgt tgg gta gtt ttg aaa aat aat gct ctg agt tac tac aaa tct gaa 480

Arg	Trp	Val	Val	Leu	Lys	Asn	Asn	Ala	Leu	Ser	Tyr	Tyr	Lys	Ser	Glu	
145					150					155					160	
gat	gaa	aca	gag	tat	ggc	tgc	aga	gga	tcc	atc	tgt	ctt	agc	aag	gct	528
Asp	Glu	Thr	Glu	Tyr	Gly	Cys	Arg	Gly	Ser	Ile	Cys	Leu	Ser	Lys	Ala	
				165					170					175		
gtc	atc	aca	cct	cac	gat	ttt	gat	gaa	tgt	cga	ttt	gat	att	agt	gta	576
Val	Ile	Thr	Pro	His	Asp	Phe	Asp	Glu	Cys	Arg	Phe	Asp	Ile	Ser	Val	
			180					185					190			
aat	gat	agt	gtt	tgg	tat	ctt	cgt	gct	cag	gat	cca	gat	cat	aga	cag	624
Asn	Asp	Ser	Val	Trp	Tyr	Leu	Arg	Ala	Gln	Asp	Pro	Asp	His	Arg	Gln	
		195					200					205				
caa	tgg	ata	gat	gcc	att	gaa	cag	cac	aag	act	gaa	tct	gga	tat	gga	672
Gln	Trp	Ile	Asp	Ala	Ile	Glu	Gln	His	Lys	Thr	Glu	Ser	Gly	Tyr	Gly	
	210					215					220					
tct	gaa	tcc	agc	ttg	cgt	cga	cat	ggc	tca	atg	gtg	tcc	ctg	gtg	tct	720
Ser	Glu	Ser	Ser	Leu	Arg	Arg	His	Gly	Ser	Met	Val	Ser	Leu	Val	Ser	
225					230					235					240	
gga	gca	agt	ggc	tac	tct	gca	aca	tcc	acc	tct	tca	ttc	aag	aaa	ggc	768
Gly	Ala	Ser	Gly	Tyr	Ser	Ala	Thr	Ser	Thr	Ser	Ser	Phe	Lys	Lys	Gly	
			245					250					255			
cac	agt	tta	cgt	gag	aag	ttg	gct	gaa	atg	gaa	aca	ttt	aga	gac	atc	816
His	Ser	Leu	Arg	Glu	Lys	Leu	Ala	Glu	Met	Glu	Thr	Phe	Arg	Asp	Ile	
		260						265					270			
tta	tgt	aga	caa	gtt	gac	acg	cta	cag	aag	tac	ttt	gat	gcc	tgt	gct	864
Leu	Cys	Arg	Gln	Val	Asp	Thr	Leu	Gln	Lys	Tyr	Phe	Asp	Ala	Cys	Ala	
		275					280					285				
gat	gct	gtc	tct	aag	gat	gaa	ctt	caa	agg	gat	aaa	gtg	gta	gaa	gat	912
Asp	Ala	Val	Ser	Lys	Asp	Glu	Leu	Gln	Arg	Asp	Lys	Val	Val	Glu	Asp	
	290					295				300						
gat	gaa	gat	gac	ttt	cct	aca	acg	cgt	tct	gat	ggg	gac	ttc	ttg	cat	960
Asp	Glu	Asp	Asp	Phe	Pro	Thr	Thr	Arg	Ser	Asp	Gly	Asp	Phe	Leu	His	
305					310					315					320	
agt	acc	aac	ggc	aat	aaa	gaa	aag	tta	ttt	cca	cat	gtg	aca	cca	aaa	1008
Ser	Thr	Asn	Gly	Asn	Lys	Glu	Lys	Leu	Phe	Pro	His	Val	Thr	Pro	Lys	
			325					330						335		
gga	att	aat	ggg	ata	gac	ttt	aaa	ggg	gaa	gcg	ata	act	ttt	aaa	gca	1056
Gly	Ile	Asn	Gly	Ile	Asp	Phe	Lys	Gly	Glu	Ala	Ile	Thr	Phe	Lys	Ala	
		340						345				350				
act	act	gct	gga	atc	ctt	gca	aca	ctt	tct	cat	tgt	att	gaa	cta	atg	1104
Thr	Thr	Ala	Gly	Ile	Leu	Ala	Thr	Leu	Ser	His	Cys	Ile	Glu	Leu	Met	
		355					360					365				
gtt	aaa	cgt	gag	gac	agc	tgg	cag	aag	aga	ctg	gat	aag	gaa	act	gag	1152
Val	Lys	Arg	Glu	Asp	Ser	Trp	Gln	Lys	Arg	Leu	Asp	Lys	Glu	Thr	Glu	

370

375

380

aag aaa aga aga aca gag gaa gca tat aaa aat gca atg aca gaa ctt 1200
 Lys Lys Arg Arg Thr Glu Glu Ala Tyr Lys Asn Ala Met Thr Glu Leu
 385 390 395 400

aag aaa aaa tcc cac ttt gga gga cca gat tat gaa gaa ggc cct aac 1248
 Lys Lys Lys Ser His Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro Asn
 405 410 415

agt ctg att aat gaa gaa gag ttc ttt gat gct gtt gaa gct gct ctt 1296
 Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala Leu
 420 425 430

gac aga caa gat aaa ata gaa gaa cag tca cag agt gaa aag gtg aga 1344
 Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val Arg
 435 440 445

tta cat tgg cct aca tcc ttg ccc tct gga gat gcc ttt tct tct gtg 1392
 Leu His Trp Pro Thr Ser Leu Pro Ser Gly Asp Ala Phe Ser Ser Val
 450 455 460

ggg aca cat aga ttt gtc caa aag gtt gaa gag atg gtg cag aac cac 1440
 Gly Thr His Arg Phe Val Gln Lys Val Glu Glu Met Val Gln Asn His
 465 470 475 480

atg act tac tca tta cag gat gta ggc gga gat gcc aat tgg cag ttg 1488
 Met Thr Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala Asn Trp Gln Leu
 485 490 495

gtt gta gaa gaa gga gaa atg aag gta tac aga aga gaa gta gaa gaa 1536
 Val Val Glu Glu Gly Glu Met Lys Val Tyr Arg Arg Glu Val Glu Glu
 500 505 510

aat ggg att gtt ctg gat cct tta aaa gct acc cat gca gtt aaa ggc 1584
 Asn Gly Ile Val Leu Asp Pro Leu Lys Ala Thr His Ala Val Lys Gly
 515 520 525

gtc aca gga cat gaa gtc tgc aat tat ttc tgg aat gtt gac gtt cgc 1632
 Val Thr Gly His Glu Val Cys Asn Tyr Phe Trp Asn Val Asp Val Arg
 530 535 540

aat gac tgg gaa aca act ata gaa aac ttt cat gtg gtg gaa aca tta 1680
 Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe His Val Val Glu Thr Leu
 545 550 555 560

gct gat aat gca atc atc att tat caa aca cac aag agg gtg tgg cct 1728
 Ala Asp Asn Ala Ile Ile Ile Tyr Gln Thr His Lys Arg Val Trp Pro
 565 570 575

gct tct cag cga gac gta tta tat ctt tct gtc att cga aag ata cca 1776
 Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser Val Ile Arg Lys Ile Pro
 580 585 590

gcc ttg act gaa aat gac cct gaa act tgg ata gtt tgt aat ttt tct 1824
 Ala Leu Thr Glu Asn Asp Pro Glu Thr Trp Ile Val Cys Asn Phe Ser
 595 600 605

gtg gat cat gac agt gct cct cta aac aac cga tgt gtc cgt gcc aaa 1872
 Val Asp His Asp Ser Ala Pro Leu Asn Asn Arg Cys Val Arg Ala Lys
 610 615 620

ata aat gtt gct atg att tgt caa acc ttg gta agc cca cca gag gga 1920
 Ile Asn Val Ala Met Ile Cys Gln Thr Leu Val Ser Pro Pro Glu Gly
 625 630 635 640

aac cag gaa att agc agg gac aac att cta tgc aag att aca tat gta 1968
 Asn Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val
 645 650 655

gct aat gtg aac cct gga gga tgg gca cca gcc tca gtg tta agg gca 2016
 Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val Leu Arg Ala
 660 665 670

gtg gca aag cga gag tat cct aaa ttt cta aaa cgt ttt act tct tac 2064
 Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys Arg Phe Thr Ser Tyr
 675 680 685

gtc caa gaa aaa act gca gga aag cct att ttg ttc tag 2103
 Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe
 690 695 700

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Ser Pro Leu Val Leu Leu Pro Arg Ser Ala Arg Cys Gln Ala Arg Arg
 35 40 45

Arg Arg Gly Gly Arg Thr Ser Ser Leu Leu Leu Leu Pro Pro Thr Pro
 50 55 60

Glu Arg Ala Leu Phe Ala Ser Pro Ser Pro Asp Pro Ser Pro Arg Gly
 65 70 75 80

Leu Gly Ala Ser Ser Gly Ala Ala Glu Gly Ala Gly Ala Gly Leu Leu

85

90

95

Leu Gly Cys Arg Ala Ser Met Ser Asp Asn Gln Ser Trp Asn Ser Ser
 100 105 110

Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly Pro Pro Val Glu Arg
 115 120 125

Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile His Gly Trp Gln Asp
 130 135 140

Arg Trp Val Val Leu Lys Asn Asn Ala Leu Ser Tyr Tyr Lys Ser Glu
 145 150 155 160

Asp Glu Thr Glu Tyr Gly Cys Arg Gly Ser Ile Cys Leu Ser Lys Ala
 165 170 175

Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg Phe Asp Ile Ser Val
 180 185 190

Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp Pro Asp His Arg Gln
 195 200 205

Gln Trp Ile Asp Ala Ile Glu Gln His Lys Thr Glu Ser Gly Tyr Gly
 210 215 220

Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met Val Ser Leu Val Ser
 225 230 235 240

Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser Ser Phe Lys Lys Gly
 245 250 255

His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu Thr Phe Arg Asp Ile
 260 265 270

Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Tyr Phe Asp Ala Cys Ala
 275 280 285

Asp Ala Val Ser Lys Asp Glu Leu Gln Arg Asp Lys Val Val Glu Asp
 290 295 300

Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp Gly Asp Phe Leu His
 305 310 315 320

Ser Thr Asn Gly Asn Lys Glu Lys Leu Phe Pro His Val Thr Pro Lys
325 330 335

Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala Ile Thr Phe Lys Ala
340 345 350

Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu Met
355 360 365

Val Lys Arg Glu Asp Ser Trp Gln Lys Arg Leu Asp Lys Glu Thr Glu
370 375 380

Lys Lys Arg Arg Thr Glu Glu Ala Tyr Lys Asn Ala Met Thr Glu Leu
385 390 395 400

Lys Lys Lys Ser His Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro Asn
405 410 415

Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala Leu
420 425 430

Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val Arg
435 440 445

Leu His Trp Pro Thr Ser Leu Pro Ser Gly Asp Ala Phe Ser Ser Val
450 455 460

Gly Thr His Arg Phe Val Gln Lys Val Glu Glu Met Val Gln Asn His
465 470 475 480

Met Thr Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala Asn Trp Gln Leu
485 490 495

Val Val Glu Glu Gly Glu Met Lys Val Tyr Arg Arg Glu Val Glu Glu
500 505 510

Asn Gly Ile Val Leu Asp Pro Leu Lys Ala Thr His Ala Val Lys Gly
515 520 525

Val Thr Gly His Glu Val Cys Asn Tyr Phe Trp Asn Val Asp Val Arg
530 535 540

Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe His Val Val Glu Thr Leu
545 550 555 560

Ala Asp Asn Ala Ile Ile Ile Tyr Gln Thr His Lys Arg Val Trp Pro
565 570 575

Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser Val Ile Arg Lys Ile Pro
580 585 590

Ala Leu Thr Glu Asn Asp Pro Glu Thr Trp Ile Val Cys Asn Phe Ser
595 600 605

Val Asp His Asp Ser Ala Pro Leu Asn Asn Arg Cys Val Arg Ala Lys
610 615 620

Ile Asn Val Ala Met Ile Cys Gln Thr Leu Val Ser Pro Pro Glu Gly
625 630 635 640

Asn Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val
645 650 655

Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val Leu Arg Ala
660 665 670

Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys Arg Phe Thr Ser Tyr
675 680 685

Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe
690 695 700

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<220>
<223> Synthetic

<400> 29

Gly Ala Gly Ala Gly Leu Leu Leu Gly Cys Arg Ala Ser
1 5 10

<210> 30
<211> 31

<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 30

Pro Ser Pro Asp Pro Ser Pro Arg Gly Leu Gly Ala Ser Ser Gly Ala
1 5 10 15

Ala Glu Gly Ala Gly Ala Gly Leu Leu Leu Gly Cys Arg Ala Ser
20 25 30

<210> 31
<211> 54
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 31

Arg Arg Gly Gly Arg Thr Ser Ser Leu Leu Leu Leu Pro Pro Thr Pro
1 5 10 15

Glu Arg Ala Leu Phe Ala Ser Pro Ser Pro Asp Pro Ser Pro Arg Gly
20 25 30

Leu Gly Ala Ser Ser Gly Ala Ala Glu Gly Ala Gly Ala Gly Leu Leu
35 40 45

Leu Gly Cys Arg Ala Ser
50

<210> 32
<211> 78
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 32

Asp Gly Trp Lys Gly Arg Leu Pro Ser Pro Leu Val Leu Leu Pro Arg
1 5 10 15

Ser Ala Arg Cys Gln Ala Arg Arg Arg Arg Gly Gly Arg Thr Ser Ser

20

25

30

Leu Leu Leu Leu Pro Pro Thr Pro Glu Arg Ala Leu Phe Ala Ser Pro
 35 40 45

Ser Pro Asp Pro Ser Pro Arg Gly Leu Gly Ala Ser Ser Gly Ala Ala
 50 55 60

Glu Gly Ala Gly Ala Gly Leu Leu Leu Gly Cys Arg Ala Ser
 65 70 75

<210> 33
 <211> 102
 <212> PRT
 <213> artificial

<220>
 <223> Synthetic

<400> 33

Ala Ser Arg Gly Leu Ser Ser Gly Gly Ser Ala Gly Arg Asn Ala Gly
 1 5 10 15

Val Thr Ala Thr Ala Ala Ala Ala Asp Gly Trp Lys Gly Arg Leu Pro
 20 25 30

Ser Pro Leu Val Leu Leu Pro Arg Ser Ala Arg Cys Gln Ala Arg Arg
 35 40 45

Arg Arg Gly Gly Arg Thr Ser Ser Leu Leu Leu Leu Pro Pro Thr Pro
 50 55 60

Glu Arg Ala Leu Phe Ala Ser Pro Ser Pro Asp Pro Ser Pro Arg Gly
 65 70 75 80

Leu Gly Ala Ser Ser Gly Ala Ala Glu Gly Ala Gly Ala Gly Leu Leu
 85 90 95

Leu Gly Cys Arg Ala Ser
 100

<210> 34
 <211> 103
 <212> PRT
 <213> artificial

<220>

<223> Synthetic

<400> 34

Leu Ala Ser Arg Gly Leu Ser Ser Gly Gly Ser Ala Gly Arg Asn Ala
1 5 10 15

Gly Val Thr Ala Thr Ala Ala Ala Asp Gly Trp Lys Gly Arg Leu
20 25 30

Pro Ser Pro Leu Val Leu Leu Pro Arg Ser Ala Arg Cys Gln Ala Arg
35 40 45

Arg Arg Arg Gly Gly Arg Thr Ser Ser Leu Leu Leu Leu Pro Pro Thr
50 55 60

Pro Glu Arg Ala Leu Phe Ala Ser Pro Ser Pro Asp Pro Ser Pro Arg
65 70 75 80

Gly Leu Gly Ala Ser Ser Gly Ala Ala Glu Gly Ala Gly Ala Gly Leu
85 90 95

Leu Leu Gly Cys Arg Ala Ser
100

<210> 35

<211> 90

<212> PRT

<213> artificial

<220>

<223> Synthetic

<400> 35

Leu Ala Ser Arg Gly Leu Ser Ser Gly Gly Ser Ala Gly Arg Asn Ala
1 5 10 15

Gly Val Thr Ala Thr Ala Ala Ala Asp Gly Trp Lys Gly Arg Leu
20 25 30

Pro Ser Pro Leu Val Leu Leu Pro Arg Ser Ala Arg Cys Gln Ala Arg
35 40 45

Arg Arg Arg Gly Gly Arg Thr Ser Ser Leu Leu Leu Leu Pro Pro Thr

50

55

60

Pro Glu Arg Ala Leu Phe Ala Ser Pro Ser Pro Asp Pro Ser Pro Arg
65 70 75 80

Gly Leu Gly Ala Ser Ser Gly Ala Ala Glu
85 90

<210> 36
<211> 18
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 36

Pro Arg Ser Ala Arg Cys Gln Ala Arg Arg Arg Arg Gly Gly Arg Thr
1 5 10 15

Ser Ser

<210> 37
<211> 897
<212> DNA
<213> artificial

<220>
<223> Synthetic

<220>
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<222> (1)..(897)

<400> 37

atg tcg gat aat cag agc tgg aac tcg tcg ggc tcg gag gag gat cca 48
Met Ser Asp Asn Gln Ser Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro
1 5 10 15

gag acg gag tct ggg ccg cct gtg gag cgc tgc ggg gtc ctc agt aag 96
Glu Thr Glu Ser Gly Pro Pro Val Glu Arg Cys Gly Val Leu Ser Lys
20 25 30

tgg aca aac tac att cat ggg tgg cag gat cgt tgg gta gtt ttg aaa 144
Trp Thr Asn Tyr Ile His Gly Trp Gln Asp Arg Trp Val Val Leu Lys
35 40 45

aat aat gct ctg agt tac tac aaa tct gaa gat gaa aca gag tat ggc 192
Asn Asn Ala Leu Ser Tyr Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly

50	55	60	
tgc aga gga tcc atc tgt ctt agc aag gct gtc atc aca cct cac gat Cys Arg Gly Ser Ile Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp 65 70 75 80			240
ttt gat gaa tgt cga ttt gat att agt gta aat gat agt gtt tgg tat Phe Asp Glu Cys Arg Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr 85 90 95			288
ctt cgt gct cag gat cca gat cat aga cag caa tgg ata gat gcc att Leu Arg Ala Gln Asp Pro Asp His Arg Gln Gln Trp Ile Asp Ala Ile 100 105 110			336
gaa cag cac aag act gaa tct gga tat gga tct gaa tcc agc ttg cgt Glu Gln His Lys Thr Glu Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg 115 120 125			384
cga cat ggc tca atg gtg tcc ctg gtg tct gga gca agt ggc tac tct Arg His Gly Ser Met Val Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser 130 135 140			432
gca aca tcc acc tct tca ttc aag aaa ggc cac agt tta cgt gag aag Ala Thr Ser Thr Ser Ser Phe Lys Lys Gly His Ser Leu Arg Glu Lys 145 150 155 160			480
ttg gct gaa atg gaa aca ttt aga gac atc tta tgt aga caa gtt gac Leu Ala Glu Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp 165 170 175			528
acg cta cag aag tac ttt gat gcc tgt gct gat gct gtc tct aag gat Thr Leu Gln Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser Lys Asp 180 185 190			576
gaa ctt caa agg gat aaa gtg gta gaa gat gat gaa gat gac ttt cct Glu Leu Gln Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro 195 200 205			624
aca acg cgt tct gat ggt gac ttc ttg cat agt acc aac ggc aat aaa Thr Thr Arg Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly Asn Lys 210 215 220			672
gaa aag tta ttt cca cat gtg aca cca aaa gga att aat ggt ata gac Glu Lys Leu Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp 225 230 235 240			720
ttt aaa ggg gaa gcg ata act ttt aaa gca act act gct gga atc ctt Phe Lys Gly Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu 245 250 255			768
gca aca ctt tct cat tgt att gaa cta atg gtt aaa cgt gag gac agc Ala Thr Leu Ser His Cys Ile Glu Leu Met Val Lys Arg Glu Asp Ser 260 265 270			816
tgg cag aag aga ctg gat aag gaa act gag aag aaa aga aga aca gag Trp Gln Lys Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg Thr Glu 275 280 285			864

gaa gca tat aaa aat gca atg aca gaa ctt aag
 Glu Ala Tyr Lys Asn Ala Met Thr Glu Leu Lys
 290 295

897

<210> 38
 <211> 299
 <212> PRT
 <213> artificial

<220>
 <223> Synthetic

<400> 38

Met Ser Asp Asn Gln Ser Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro
 1 5 10 15

Glu Thr Glu Ser Gly Pro Pro Val Glu Arg Cys Gly Val Leu Ser Lys
 20 25 30

Trp Thr Asn Tyr Ile His Gly Trp Gln Asp Arg Trp Val Val Leu Lys
 35 40 45

Asn Asn Ala Leu Ser Tyr Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly
 50 55 60

Cys Arg Gly Ser Ile Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp
 65 70 75 80

Phe Asp Glu Cys Arg Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr
 85 90 95

Leu Arg Ala Gln Asp Pro Asp His Arg Gln Gln Trp Ile Asp Ala Ile
 100 105 110

Glu Gln His Lys Thr Glu Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg
 115 120 125

Arg His Gly Ser Met Val Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser
 130 135 140

Ala Thr Ser Thr Ser Ser Phe Lys Lys Gly His Ser Leu Arg Glu Lys
 145 150 155 160

Leu Ala Glu Met Glu Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp

165

170

175

Thr Leu Gln Lys Tyr Phe Asp Ala Cys Ala Asp Ala Val Ser Lys Asp
 180 185 190

Glu Leu Gln Arg Asp Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro
 195 200 205

Thr Thr Arg Ser Asp Gly Asp Phe Leu His Ser Thr Asn Gly Asn Lys
 210 215 220

Glu Lys Leu Phe Pro His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp
 225 230 235 240

Phe Lys Gly Glu Ala Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu
 245 250 255

Ala Thr Leu Ser His Cys Ile Glu Leu Met Val Lys Arg Glu Asp Ser
 260 265 270

Trp Gln Lys Arg Leu Asp Lys Glu Thr Glu Lys Lys Arg Arg Thr Glu
 275 280 285

Glu Ala Tyr Lys Asn Ala Met Thr Glu Leu Lys
 290 295

<210> 39
 <211> 5
 <212> PRT
 <213> artificial

<220>
 <223> Synthetic

<400> 39

Ser His Cys Ile Glu
 1 5

<210> 40
 <211> 5
 <212> PRT
 <213> artificial

<220>
 <223> Synthetic

<400> 40

Ser His Cys Ile Gln
1 5

<210> 41
<211> 10
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 41

Ala Thr Thr Ala Gly Ile Leu Ala Thr Leu
1 5 10

<210> 42
<211> 10
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 42

Leu Met Val Lys Arg Glu Asp Ser Trp Gln
1 5 10

<210> 43
<211> 15
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 43

Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu Met Val Lys Arg
1 5 10 15

<210> 44
<211> 15
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 44

Ile Leu Ala Thr Leu Ser His Cys Ile Gln Leu Met Val Lys Arg
1 5 10 15

<210> 45
<211> 10
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 45

Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe
1 5 10

<210> 46
<211> 26
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 46

Pro Tyr Ser Arg Ser Ser Ser Met Ser Ser Ile Asp Leu Val Ser Ala
1 5 10 15

Ser Asp Asp Val His Arg Phe Ser Ser Gln
20 25

<210> 47
<211> 21
<212> RNA
<213> artificial

<220>
<223> Synthetic

<400> 47
aaacuacauu cauggguggc a

21

<210> 48
<211> 21
<212> RNA
<213> artificial

<220>
<223> Synthetic

<400> 48
aaacagagua uggcugcaga g 21

<210> 49
<211> 21
<212> RNA
<213> artificial

<220>
<223> Synthetic

<400> 49
aaguacuuug augccugugc u 21

<210> 50
<211> 21
<212> RNA
<213> artificial

<220>
<223> Synthetic

<400> 50
aaaggcguca caggacauga a 21

<210> 51
<211> 21
<212> RNA
<213> artificial

<220>
<223> Synthetic

<400> 51
aagcccuaua gucgucuuc c 21

<210> 52
<211> 244
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 52

Gly Leu Lys Gly Lys Arg Gly Asp Ser Gly Ser Pro Ala Thr Trp Thr
1 5 10 15

Thr Arg Gly Phe Val Phe Thr Arg His Ser Gln Thr Thr Ala Ile Pro
20 25 30

Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe Leu
35 40 45

Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu
50 55 60

Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn
65 70 75 80

Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp
85 90 95

Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly
100 105 110

Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly Pro
115 120 125

Ala Ile Ala Ile Ala Val His Ser Gln Thr Thr Asp Ile Pro Pro Cys
130 135 140

Pro His Gly Trp Ile Ser Leu Trp Lys Gly Phe Ser Phe Ile Met Phe
145 150 155 160

Thr Ser Ala Gly Ser Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro Gly
165 170 175

Ser Cys Leu Glu Glu Phe Arg Ala Ser Pro Phe Leu Glu Cys His Gly
180 185 190

Arg Gly Thr Cys Asn Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu Ala
195 200 205

Ser Leu Asn Pro Glu Arg Met Phe Arg Lys Pro Ile Pro Ser Thr Val
210 215 220

Lys Ala Gly Glu Leu Glu Lys Ile Ile Ser Arg Cys Gln Val Cys Met
225 230 235 240

Lys Lys Arg His

<210> 53
<211> 197
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 53

Met Ala Ser Gln Lys Arg Pro Ser Gln Arg His Gly Ser Lys Tyr Leu
1 5 10 15

Ala Thr Ala Ser Thr Met Asp His Ala Arg His Gly Phe Leu Pro Arg
20 25 30

His Arg Asp Thr Gly Ile Leu Asp Ser Ile Gly Arg Phe Phe Gly Gly
35 40 45

Asp Arg Gly Ala Pro Lys Arg Gly Ser Gly Lys Val Pro Trp Leu Lys
50 55 60

Pro Gly Arg Ser Pro Leu Pro Ser His Ala Arg Ser Gln Pro Gly Leu
65 70 75 80

Cys Asn Met Tyr Lys Asp Ser His His Pro Ala Arg Thr Ala His Tyr
85 90 95

Gly Ser Leu Pro Gln Lys Ser His Gly Arg Thr Gln Asp Glu Asn Pro
100 105 110

Val Val His Phe Phe Lys Asn Ile Val Thr Pro Arg Thr Pro Pro Pro
115 120 125

Ser Gln Gly Lys Gly Arg Gly Leu Ser Leu Ser Arg Phe Ser Trp Gly
130 135 140

Ala Glu Gly Gln Arg Pro Gly Phe Gly Tyr Gly Gly Arg Ala Ser Asp
145 150 155 160

Tyr Lys Ser Ala His Lys Gly Phe Lys Gly Val Asp Ala Gln Gly Thr
165 170 175

Leu Ser Lys Ile Phe Lys Leu Gly Gly Arg Asp Ser Arg Ser Gly Ser
180 185 190

Pro Met Ala Arg Arg
195

<210> 54
<211> 253
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 54

Met Ala Asn Leu Gly Cys Trp Met Leu Val Leu Phe Val Ala Thr Trp
1 5 10 15

Ser Asp Leu Gly Leu Cys Lys Lys Arg Pro Lys Pro Gly Gly Trp Asn
20 25 30

Thr Gly Gly Ser Arg Tyr Pro Gly Gln Gly Ser Pro Gly Gly Asn Arg
35 40 45

Tyr Pro Pro Gln Gly Gly Gly Gly Trp Gly Gln Pro His Gly Gly Gly
50 55 60

Trp Gly Gln Pro His Gly Gly Gly Trp Gly Gln Pro His Gly Gly Gly
65 70 75 80

Trp Gly Gln Pro His Gly Gly Gly Trp Gly Gln Gly Gly Gly Thr His
85 90 95

Ser Gln Trp Asn Lys Pro Ser Lys Pro Lys Thr Asn Met Lys His Met
100 105 110

Ala Gly Ala Ala Ala Ala Gly Ala Val Val Gly Gly Leu Gly Gly Tyr
115 120 125

Met Leu Gly Ser Ala Met Ser Arg Pro Ile Ile His Phe Gly Ser Asp
130 135 140

Tyr Glu Asp Arg Tyr Tyr Arg Glu Asn Met His Arg Tyr Pro Asn Gln
145 150 155 160

Val Tyr Tyr Arg Pro Met Asp Glu Tyr Ser Asn Gln Asn Asn Phe Val
165 170 175

His Asp Cys Val Asn Ile Thr Ile Lys Gln His Thr Val Thr Thr Thr
180 185 190

Thr Lys Gly Glu Asn Phe Thr Glu Thr Asp Val Lys Met Met Glu Arg
195 200 205

Val Val Glu Gln Met Cys Ile Thr Gln Tyr Glu Arg Glu Ser Gln Ala
210 215 220

Tyr Tyr Gln Arg Gly Ser Ser Met Val Leu Phe Ser Ser Pro Pro Val
225 230 235 240

Ile Leu Leu Ile Ser Phe Leu Ile Phe Leu Ile Val Gly
245 250

<210> 55
<211> 42
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 55

Asp Ala Glu Phe Arg His Asp Ser Gly Tyr Glu Val His His Gln Lys
1 5 10 15

Leu Val Phe Phe Ala Glu Asp Val Gly Ser Asn Lys Gly Ala Ile Ile
20 25 30

Gly Leu Met Val Gly Gly Val Val Ile Ala
35 40

<210> 56
<211> 244
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 56

Gly Leu Lys Gly Lys Arg Gly Asp Ala Gly Ser Pro Ala Thr Trp Thr
1 5 10 15

Thr Arg Gly Phe Val Phe Thr Arg His Ser Gln Thr Thr Ala Ile Pro
20 25 30

Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe Leu
35 40 45

Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu
50 55 60

Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn
65 70 75 80

Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp
85 90 95

Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly
100 105 110

Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly Pro
115 120 125

Ala Ile Ala Ile Ala Val His Ser Gln Thr Thr Asp Ile Pro Pro Cys
130 135 140

Pro His Gly Trp Ile Ser Leu Trp Lys Gly Phe Ser Phe Ile Met Phe
145 150 155 160

Thr Ser Ala Gly Ser Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro Gly
165 170 175

Ser Cys Leu Glu Glu Phe Arg Ala Ser Pro Phe Leu Glu Cys His Gly
180 185 190

Arg Gly Thr Cys Asn Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu Ala
195 200 205

Ser Leu Asn Pro Glu Arg Met Phe Arg Lys Pro Ile Pro Ser Thr Val
210 215 220

Lys Ala Gly Glu Leu Glu Lys Ile Ile Ser Arg Cys Gln Val Cys Met
225 230 235 240

Lys Lys Arg His

<210> 57
<211> 244
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 57

Gly Leu Lys Gly Lys Arg Gly Asp Asp Gly Ser Pro Ala Thr Trp Thr
1 5 10 15

Thr Arg Gly Phe Val Phe Thr Arg His Ser Gln Thr Thr Ala Ile Pro
20 25 30

Ser Cys Pro Glu Gly Thr Val Pro Leu Tyr Ser Gly Phe Ser Phe Leu
35 40 45

Phe Val Gln Gly Asn Gln Arg Ala His Gly Gln Asp Leu Gly Thr Leu
50 55 60

Gly Ser Cys Leu Gln Arg Phe Thr Thr Met Pro Phe Leu Phe Cys Asn
65 70 75 80

Val Asn Asp Val Cys Asn Phe Ala Ser Arg Asn Asp Tyr Ser Tyr Trp
85 90 95

Leu Ser Thr Pro Ala Leu Met Pro Met Asn Met Ala Pro Ile Thr Gly
100 105 110

Arg Ala Leu Glu Pro Tyr Ile Ser Arg Cys Thr Val Cys Glu Gly Pro
115 120 125

Ala Ile Ala Ile Ala Val His Ser Gln Thr Thr Asp Ile Pro Pro Cys
130 135 140

Pro His Gly Trp Ile Ser Leu Trp Lys Gly Phe Ser Phe Ile Met Phe
145 150 155 160

Thr Ser Ala Gly Ser Glu Gly Thr Gly Gln Ala Leu Ala Ser Pro Gly
165 170 175

Ser Cys Leu Glu Glu Phe Arg Ala Ser Pro Phe Leu Glu Cys His Gly
180 185 190

Arg Gly Thr Cys Asn Tyr Tyr Ser Asn Ser Tyr Ser Phe Trp Leu Ala
195 200 205

Ser Leu Asn Pro Glu Arg Met Phe Arg Lys Pro Ile Pro Ser Thr Val
210 215 220

Lys Ala Gly Glu Leu Glu Lys Ile Ile Ser Arg Cys Gln Val Cys Met
225 230 235 240

Lys Lys Arg His

<210> 58
<211> 20
<212> DNA
<213> artificial

<220>
<223> ON-hmbGPBP

<400> 58
cctccgagcc cgacgagttc

20

<210> 59
<211> 20
<212> DNA
<213> artificial

<220>
<223> ON-dinb1

<400> 59
gaccgaaagg ggcacgcaac

20

<210> 60
<211> 33
<212> DNA
<213> artificial

<220>
<223> ON-GPBP D102

<400> 60
aaaaagaatt cgcacgagg gggctaagtt cgg

33

<210> 61
<211> 31
<212> DNA
<213> artificial

<220>
<223> ON-GPBP D174

<400> 61
aaaaagaatt cgacggctgg aagggtaggc t

31

<210> 62
<211> 32
<212> DNA
<213> artificial

<220>
<223> ON-GPBP D246

<400> 62
aaaaagaatt ctgtcaggcg cggcggcggc gc

32

<210> 63
<211> 30
<212> DNA
<213> artificial

<220>
<223> ON-GPBP D315

<400> 63
gacgaattcc catccccga cccttcaccc

30

<210> 64
<211> 33
<212> DNA
<213> artificial

<220>
<223> ON-GPBP D369

<400> 64
aaaaagaatt cggagcgggg gccggtctcc tgc

33

<210> 65
<211> 20
<212> DNA
<213> artificial

<220>
<223> ON-pU1

<400> 65

acgactcact atagggagac

20

<210> 66
<211> 20
<212> DNA
<213> artificial

<220>
<223> ON-pcDNAc

<400> 66
ctctagcatt taggtgacac

20

<210> 67
<211> 33
<212> DNA
<213> artificial

<220>
<223> ON-GPBPMet (mutant)

<400> 67
ggttgtcgag cctccggatc ggataatcag agc

33

<210> 68
<211> 30
<212> DNA
<213> artificial

<220>
<223> ON-PrP-F3

<400> 68
gagaattcag cagtcattat ggcgaacctt

30

<210> 69
<211> 31
<212> DNA
<213> artificial

<220>
<223> ON- PrP-R1

<400> 69
gaactcgagc cttcctcatc ccactatcag g

31

<210> 70
<211> 25
<212> DNA
<213> artificial

<220>

<223> ON-E/K-PrP-F6

<400> 70
tatcacccag tacaagaggg aatct

25

<210> 71
<211> 25
<212> DNA
<213> artificial

<220>
<223> ON-E/K-PrP-R6

<400> 71
agattccctc ttgtactggg tgata

25

<210> 72
<211> 22
<212> DNA
<213> artificial

<220>
<223> ON-E168R-F1

<400> 72
cccatggata ggtacagcaa cc

22

<210> 73
<211> 22
<212> DNA
<213> artificial

<220>
<223> ON-E168R-R1

<400> 73
ggttgctgta cctatccatg gg

22

<210> 74
<211> 25
<212> DNA
<213> artificial

<220>
<223> ON-Q172R-F1

<400> 74
gagtacagca acaggaacaa ctttg

25

<210> 75
<211> 25
<212> DNA

<213> artificial

<220>

<223> ON-Q172R-R1

<400> 75

caaagttggt cctgttgctg tactc

25

<210> 76

<211> 22

<212> DNA

<213> artificial

<220>

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23

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gaaa 64

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<211> 64
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<223> SiGPBP/D26-1

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gtgg 64

<210> 82
<211> 64
<212> DNA
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<220>
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gaaa 64

<210> 83
<211> 64
<212> DNA
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<223> SiGPBP/D26-2

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gtgg 64

<210> 84

<211> 64
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gaaa 64

<210> 85
<211> 64
<212> DNA
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<223> SiGPBP/D26-3

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acgg 64

<210> 86
<211> 64
<212> DNA
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<220>
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gaaa 64

<210> 87
<211> 64
<212> DNA
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<223> SiGPBP/D26-4

<400> 87
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ctgg 64

<210> 88
<211> 64

<212> DNA
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<400> 88
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gaaa 64

<210> 89
<211> 64
<212> DNA
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<220>
<223> SiGPBP

<400> 89
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gcgg 64

<210> 90
<211> 14
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 90

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1 5 10

<210> 91
<211> 15
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 91

Val Leu Met Ala Ser Leu Glu Thr Leu Cys Arg Ile His Lys Ile
1 5 10 15

<210> 92
<211> 22
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<213> artificial

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<223> Synthetic

<400> 92

Lys Gly Lys Pro Gly Asp Thr Gly Pro Pro Ala Ala Gly Ala Val Met
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Arg Gly Phe Val Phe Thr
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<211> 2760

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (138)..(2318)

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tccctccctg actgagg ttg gca tct agg ggg ccg agt tca ggt ggc ggc	170
Leu Ala Ser Arg Gly Pro Ser Ser Gly Gly Gly	
1 5 10	
gcc ggg cgc agc gca ggg gtc acg gcc acg gcg gct gac ggc tgg aag	218
Ala Gly Arg Ser Ala Gly Val Thr Ala Thr Ala Ala Asp Gly Trp Lys	
15 20 25	
ggc agg ctt tct tcg ccg ctc gtc ctc ctt ccc cgg tcc gct cgg tgt	266
Gly Arg Leu Ser Ser Pro Leu Val Leu Leu Pro Arg Ser Ala Arg Cys	
30 35 40	
cag gcg cgg cgg cgg cgg cgc ggc ggg cgc gct tcg tcc ctc ttc ctg	314
Gln Ala Arg Arg Arg Arg Arg Arg Gly Gly Arg Ala Ser Ser Leu Phe Leu	
45 50 55	
ttc cct cac tcc ccg gag cgg gct ctc ttg gcg gtg cca tcc ccc gac	362
Phe Pro His Ser Pro Glu Arg Ala Leu Leu Ala Val Pro Ser Pro Asp	
60 65 70 75	
cct tca ccc cag gga cta ggc gcc tgc act ggc gca gct cgc gga gcg	410
Pro Ser Pro Gln Gly Leu Gly Ala Cys Thr Gly Ala Ala Arg Gly Ala	
80 85 90	
ggg gcc ggt ctc ctg ctc ggc tgt cgc gtc tcc atg tcg gat aac cag	458
Gly Ala Gly Leu Leu Leu Gly Cys Arg Val Ser Met Ser Asp Asn Gln	
95 100 105	

agc tgg aac tcg tcg ggc tcg gag gag gat ccg gag acg gag tcc ggg	506
Ser Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly	
110 115 120	
ccg cct gtg gag cgc tgc ggg gtc ctc agc aag tgg aca aac tat att	554
Pro Pro Val Glu Arg Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile	
125 130 135	
cat gga tgg cag gat cgt tgg gta gtt ttg aaa aat aat act ttg agt	602
His Gly Trp Gln Asp Arg Trp Val Val Leu Lys Asn Asn Thr Leu Ser	
140 145 150 155	
tac tac aaa tct gaa gat gaa aca gaa tat ggc tgt agg gga tcc atc	650
Tyr Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly Cys Arg Gly Ser Ile	
160 165 170	
tgt ctt agc aag gct gtg atc acg cct cac gat ttt gat gaa tgc cgg	698
Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg	
175 180 185	
ttt gat atc agt gta aat gat agt gtt tgg tac ctt cga gct cag gac	746
Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp	
190 195 200	
ccg gag cac aga cag caa tgg gta gac gcc att gaa cag cac aag act	794
Pro Glu His Arg Gln Gln Trp Val Asp Ala Ile Glu Gln His Lys Thr	
205 210 215	
gaa tcg gga tat gga tct gag tcc agc ttg cgt aga cat ggc tca atg	842
Glu Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met	
220 225 230 235	
gtg tca ctg gtg tct gga gcg agt ggc tat tct gct acg tcc acc tct	890
Val Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser	
240 245 250	
tct ttc aag aaa ggc cac agt tta cgt gag aaa ctg gct gaa atg gag	938
Ser Phe Lys Lys Gly His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu	
255 260 265	
aca ttt cgg gac atc ctg tgc cgg cag gtt gat act ctc cag aag tac	986
Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Tyr	
270 275 280	
ttt gat gtc tgt gct gac gct gtc tcc aag gat gag ctt cag agg gat	1034
Phe Asp Val Cys Ala Asp Ala Val Ser Lys Asp Glu Leu Gln Arg Asp	
285 290 295	
aaa gtc gta gaa gat gat gaa gat gac ttc cct aca act cgt tct gat	1082
Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp	
300 305 310 315	
gga gac ttt ttg cac aat acc aat ggt aat aaa gaa aaa tta ttt cca	1130
--Gly Asp Phe-Leu His Asn Thr Asn-Gly-Asn Lys Glu-Lys Leu Phe Pro	
320 325 330	

cat gta aca cca aaa gga att aat ggc ata gac ttt aaa ggg gaa gca	1178
His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala	
335 340 345	
ata act ttt aaa gca act act gct gga atc ctt gct aca ctt tct cat	1226
Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His	
350 355 360	
tgt att gaa tta atg gta aaa cgg gaa gag agc tgg caa aaa aga cac	1274
Cys Ile Glu Leu Met Val Lys Arg Glu Glu Ser Trp Gln Lys Arg His	
365 370 375	
gat agg gaa gtg gaa aag agg aga cga gtg gag gaa gcg tac aag aat	1322
Asp Arg Glu Val Glu Lys Arg Arg Arg Val Glu Glu Ala Tyr Lys Asn	
380 385 390 395	
gtg atg gaa gaa ctt aag aag aaa ccc cgt ttc gga ggg ccg gat tat	1370
Val Met Glu Glu Leu Lys Lys Lys Pro Arg Phe Gly Gly Pro Asp Tyr	
400 405 410	
gaa gaa ggt cca aac agt ctg att aat gag gaa gag ttc ttt gat gct	1418
Glu Glu Gly Pro Asn Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala	
415 420 425	
gtt gaa gct gct ctt gac aga caa gat aaa ata gag gaa cag tca cag	1466
Val Glu Ala Ala Leu Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln	
430 435 440	
agt gaa aag gtc agg tta cac tgg ccc aca tca ttg cca tct gga gac	1514
Ser Glu Lys Val Arg Leu His Trp Pro Thr Ser Leu Pro Ser Gly Asp	
445 450 455	
acc ttt tct tct gtc ggg acg cat aga ttt gta caa aag ccc tat agt	1562
Thr Phe Ser Ser Val Gly Thr His Arg Phe Val Gln Lys Pro Tyr Ser	
460 465 470 475	
cgc tct tcc tcc atg tct tcc att gat cta gtc agt gcc tct gac gat	1610
Arg Ser Ser Ser Met Ser Ser Ile Asp Leu Val Ser Ala Ser Asp Asp	
480 485 490	
gtt cac aga ttc agc tcc cag gtt gaa gaa atg gta cag aac cac atg	1658
Val His Arg Phe Ser Ser Gln Val Glu Glu Met Val Gln Asn His Met	
495 500 505	
aat tat tca tta cag gat gta ggt ggt gat gca aat tgg caa ctg gtt	1706
Asn Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala Asn Trp Gln Leu Val	
510 515 520	
gtt gaa gaa gga gaa atg aag gta tac aga aga gaa gtg gaa gaa aat	1754
Val Glu Glu Gly Glu Met Lys Val Tyr Arg Arg Glu Val Glu Glu Asn	
525 530 535	
gga att gtt ctg gat cct ttg aaa gct act cat gca gtt aaa ggt gtt	1802
Gly Ile Val Leu Asp Pro Leu Lys Ala Thr His Ala Val Lys Gly Val	
540 545 550 555	
aca gga cat gag gtc tgc aat tac ttt tgg aat gtt gat gtt cgc aat	1850

Thr Gly His Glu Val Cys Asn Tyr Phe Trp Asn Val Asp Val Arg Asn	
560 565 570	
gac tgg gaa act act ata gaa aac ttt cat gtg gtg gaa aca tta gct	1898
Asp Trp Glu Thr Thr Ile Glu Asn Phe His Val Val Glu Thr Leu Ala	
575 580 585	
gat aat gca atc atc gtt tat caa acg cac aag aga gta tgg ccc gct	1946
Asp Asn Ala Ile Ile Val Tyr Gln Thr His Lys Arg Val Trp Pro Ala	
590 595 600	
tct cag aga gac gta ctg tat ctt tct gct att cga aag atc cca gcc	1994
Ser Gln Arg Asp Val Leu Tyr Leu Ser Ala Ile Arg Lys Ile Pro Ala	
605 610 615	
ttg act gaa aat gac cct gaa act tgg ata gtt tgt aat ttt tct gtg	2042
Leu Thr Glu Asn Asp Pro Glu Thr Trp Ile Val Cys Asn Phe Ser Val	
620 625 630 635	
gat cat gat agt gct cct ctg aac aat cga tgt gtc cgt gcc aaa atc	2090
Asp His Asp Ser Ala Pro Leu Asn Asn Arg Cys Val Arg Ala Lys Ile	
640 645 650	
aat att gct atg att tgt caa act tta gta agc cca cca gag gga gac	2138
Asn Ile Ala Met Ile Cys Gln Thr Leu Val Ser Pro Pro Glu Gly Asp	
655 660 665	
cag gag ata agc aga gac aac att ctg tgc aag atc acg tat gta gct	2186
Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val Ala	
670 675 680	
aat gtg aac cca gga gga tgg gcg cca gct tgc gtc tta aga gca gtg	2234
Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val Leu Arg Ala Val	
685 690 695	
gca aag cga gaa tac cct aag ttt cta aaa cgt ttt act tct tat gtc	2282
Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys Arg Phe Thr Ser Tyr Val	
700 705 710 715	
caa gaa aaa act gca gga aaa cca att ttg ttt tag tattaacagt	2328
Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe	
720 725	
gactgaagca aggctgcgtg acgttccatg ttggagaaag gagggaaaaa ataaaaagaa	2388
tcctctaagc tggaacgtag gatctacagc cttgtctgtg gcccaagaag aaacattgca	2448
atcgtaaagc tgggtatcca gcactagcca tctcctgcta ggctcctcg ctcagcgtgt	2508
aactataaat acatgtagaa tcacatggat atggctatat ttttatttgc ttgctccttg	2568
gagtgaaaac aaataacttt gaattacaac taggaattaa ccgatgcttt aattttgagg	2628
aactttttca gaatttttta ttaccatgg tccagcctaa gatcctcagt tgtatcaggt	2688
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<400> 94

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35 40 45

Arg Arg Gly Gly Arg Ala Ser Ser Leu Phe Leu Phe Pro His Ser Pro
50 55 60

Glu Arg Ala Leu Leu Ala Val Pro Ser Pro Asp Pro Ser Pro Gln Gly
65 70 75 80

Leu Gly Ala Cys Thr Gly Ala Ala Arg Gly Ala Gly Ala Gly Leu Leu
85 90 95

Leu Gly Cys Arg Val Ser Met Ser Asp Asn Gln Ser Trp Asn Ser Ser
100 105 110

Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly Pro Pro Val Glu Arg
115 120 125

Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile His Gly Trp Gln Asp
130 135 140

Arg Trp Val Val Leu Lys Asn Asn Thr Leu Ser Tyr Tyr Lys Ser Glu
145 150 155 160

Asp Glu Thr Glu Tyr Gly Cys Arg Gly Ser Ile Cys Leu Ser Lys Ala
165 170 175

Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg Phe Asp Ile Ser Val
180 185 190

Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp Pro Glu His Arg Gln
195 200 205

Gln Trp Val Asp Ala Ile Glu Gln His Lys Thr Glu Ser Gly Tyr Gly
210 215 220

Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met Val Ser Leu Val Ser
225 230 235 240

Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser Ser Phe Lys Lys Gly
245 250 255

His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu Thr Phe Arg Asp Ile
260 265 270

Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Tyr Phe Asp Val Cys Ala
275 280 285

Asp Ala Val Ser Lys Asp Glu Leu Gln Arg Asp Lys Val Val Glu Asp
290 295 300

Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp Gly Asp Phe Leu His
305 310 315 320

Asn Thr Asn Gly Asn Lys Glu Lys Leu Phe Pro His Val Thr Pro Lys
325 330 335

Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala Ile Thr Phe Lys Ala
340 345 350

Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu Met
355 360 365

Val Lys Arg Glu Glu Ser Trp Gln Lys Arg His Asp Arg Glu Val Glu
370 375 380

Lys Arg Arg Arg Val Glu Glu Ala Tyr Lys Asn Val Met Glu Glu Leu
385 390 395 400

Lys Lys Lys Pro Arg Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro Asn
405 410 415

Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala Leu
420 425 430

Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val Arg
435 440 445

Leu His Trp Pro Thr Ser Leu Pro Ser Gly Asp Thr Phe Ser Ser Val
450 455 460

Gly Thr His Arg Phe Val Gln Lys Pro Tyr Ser Arg Ser Ser Ser Met
465 470 475 480

Ser Ser Ile Asp Leu Val Ser Ala Ser Asp Asp Val His Arg Phe Ser
485 490 495

Ser Gln Val Glu Glu Met Val Gln Asn His Met Asn Tyr Ser Leu Gln
500 505 510

Asp Val Gly Gly Asp Ala Asn Trp Gln Leu Val Val Glu Glu Gly Glu
515 520 525

Met Lys Val Tyr Arg Arg Glu Val Glu Glu Asn Gly Ile Val Leu Asp
530 535 540

Pro Leu Lys Ala Thr His Ala Val Lys Gly Val Thr Gly His Glu Val
545 550 555 560

Cys Asn Tyr Phe Trp Asn Val Asp Val Arg Asn Asp Trp Glu Thr Thr
565 570 575

Ile Glu Asn Phe His Val Val Glu Thr Leu Ala Asp Asn Ala Ile Ile
580 585 590

Val Tyr Gln Thr His Lys Arg Val Trp Pro Ala Ser Gln Arg Asp Val
595 600 605

Leu Tyr Leu Ser Ala Ile Arg Lys Ile Pro Ala Leu Thr Glu Asn Asp
610 615 620

Pro Glu Thr Trp Ile Val Cys Asn Phe Ser Val Asp His Asp Ser Ala
625 630 635 640

Pro Leu Asn Asn Arg Cys Val Arg Ala Lys Ile Asn Ile Ala Met Ile

645

650

655

Cys Gln Thr Leu Val Ser Pro Pro Glu Gly Asp Gln Glu Ile Ser Arg
660 665 670

Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val Ala Asn Val Asn Pro Gly
675 680 685

Gly Trp Ala Pro Ala Ser Val Leu Arg Ala Val Ala Lys Arg Glu Tyr
690 695 700

Pro Lys Phe Leu Lys Arg Phe Thr Ser Tyr Val Gln Glu Lys Thr Ala
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Gly Lys Pro Ile Leu Phe
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<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (138)..(2240)

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tccctccctg actgagg ttg gca tct agg ggg ccg agt tca ggt ggc ggc 170
Leu Ala Ser Arg Gly Pro Ser Ser Gly Gly Gly
1 5 10

gcc ggg cgc agc gca ggg gtc acg gcc acg gcg gct gac ggc tgg aag 218
Ala Gly Arg Ser Ala Gly Val Thr Ala Thr Ala Ala Asp Gly Trp Lys
15 20 25

ggc agg ctt tct tcg ccg ctc gtc ctc ctt ccc cgg tcc gct cgg tgt 266
Gly Arg Leu Ser Ser Pro Leu Val Leu Leu Pro Arg Ser Ala Arg Cys
30 35 40

cag gcg cgg cgg cgg cgg cgc ggc ggg cgc gct tcg tcc ctc ttc ctg 314
Gln Ala Arg Arg Arg Arg Arg Gly Gly Arg Ala Ser Ser Leu Phe Leu
45 50 55

ttc cct cac tcc ccg gag cgg gct ctc ttg gcg gtg cca tcc ccc gac 362
Phe Pro His Ser Pro Glu Arg Ala Leu Leu Ala Val Pro Ser Pro Asp
60 65 70 75

cct tca ccc cag gga cta ggc gcc tgc act ggc gca gct cgc gga gcg Pro Ser Pro Gln Gly Leu Gly Ala Cys Thr Gly Ala Ala Arg Gly Ala 80 85 90	410
ggg gcc ggt ctc ctg ctc ggc tgt cgc gtc tcc atg tcg gat aac cag Gly Ala Gly Leu Leu Leu Gly Cys Arg Val Ser Met Ser Asp Asn Gln 95 100 105	458
agc tgg aac tcg tcg ggc tcg gag gag gat ccg gag acg gag tcc ggg Ser Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly 110 115 120	506
ccg cct gtg gag cgc tgc ggg gtc ctc agc aag tgg aca aac tat att Pro Pro Val Glu Arg Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile 125 130 135	554
cat gga tgg cag gat cgt tgg gta gtt ttg aaa aat aat act ttg agt His Gly Trp Gln Asp Arg Trp Val Val Leu Lys Asn Asn Thr Leu Ser 140 145 150 155	602
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tgt ctt agc aag gct gtg atc acg cct cac gat ttt gat gaa tgc cgg Cys Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg 175 180 185	698
ttt gat atc agt gta aat gat agt gtt tgg tac ctt cga gct cag gac Phe Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp 190 195 200	746
ccg gag cac aga cag caa tgg gta gac gcc att gaa cag cac aag act Pro Glu His Arg Gln Gln Trp Val Asp Ala Ile Glu Gln His Lys Thr 205 210 215	794
gaa tcg gga tat gga tct gag tcc agc ttg cgt aga cat ggc tca atg Glu Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met 220 225 230 235	842
gtg tca ctg gtg tct gga gcg agt ggc tat tct gct acg tcc acc tct Val Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser 240 245 250	890
tct ttc aag aaa ggc cac agt tta cgt gag aaa ctg gct gaa atg gag Ser Phe Lys Lys Gly His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu 255 260 265	938
aca ttt cgg gac atc ctg tgc cgg cag gtt gat act ctc cag aag tac Thr Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Tyr 270 275 280	986
ttt gat gtc tgt gct gac gct gtc tcc aag gat gag ctt cag agg gat Phe Asp Val Cys Ala Asp Ala Val Ser Lys Asp Glu Leu Gln Arg Asp 285 290 295	1034

aaa gtc gta gaa gat gat gaa gat gac ttc cct aca act cgt tct gat	1082
Lys Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp	
300 305 310 315	
gga gac ttt ttg cac aat acc aat ggt aat aaa gaa aaa tta ttt cca	1130
Gly Asp Phe Leu His Asn Thr Asn Gly Asn Lys Glu Lys Leu Phe Pro	
320 325 330	
cat gta aca cca aaa gga att aat ggc ata gac ttt aaa ggg gaa gca	1178
His Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala	
335 340 345	
ata act ttt aaa gca act act gct gga atc ctt gct aca ctt tct cat	1226
Ile Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His	
350 355 360	
tgt att gaa tta atg gta aaa cgg gaa gag agc tgg caa aaa aga cac	1274
Cys Ile Glu Leu Met Val Lys Arg Glu Glu Ser Trp Gln Lys Arg His	
365 370 375	
gat agg gaa gtg gaa aag agg aga cga gtg gag gaa gcg tac aag aat	1322
Asp Arg Glu Val Glu Lys Arg Arg Arg Val Glu Glu Ala Tyr Lys Asn	
380 385 390 395	
gtg atg gaa gaa ctt aag aag aaa ccc cgt ttc gga ggg ccg gat tat	1370
Val Met Glu Glu Leu Lys Lys Lys Pro Arg Phe Gly Gly Pro Asp Tyr	
400 405 410	
gaa gaa ggt cca aac agt ctg att aat gag gaa gag ttc ttt gat gct	1418
Glu Glu Gly Pro Asn Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala	
415 420 425	
gtt gaa gct gct ctt gac aga caa gat aaa ata gag gaa cag tca cag	1466
Val Glu Ala Ala Leu Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln	
430 435 440	
agt gaa aag gtc agg tta cac tgg ccc aca tca ttg cca tct gga gac	1514
Ser Glu Lys Val Arg Leu His Trp Pro Thr Ser Leu Pro Ser Gly Asp	
445 450 455	
acc ttt tct tct gtc ggg acg cat aga ttt gta caa aag gtt gaa gaa	1562
Thr Phe Ser Ser Val Gly Thr His Arg Phe Val Gln Lys Val Glu Glu	
460 465 470 475	
atg gta cag aac cac atg aat tat tca tta cag gat gta ggt ggt gat	1610
Met Val Gln Asn His Met Asn Tyr Ser Leu Gln Asp Val Gly Gly Asp	
480 485 490	
gca aat tgg caa ctg gtt gtt gaa gaa gga gaa atg aag gta tac aga	1658
Ala Asn Trp Gln Leu Val Val Glu Glu Gly Glu Met Lys Val Tyr Arg	
495 500 505	
aga gaa gtg gaa gaa aat gga att gtt ctg gat cct ttg aaa gct act	1706
Arg Glu Val Glu Glu Asn Gly Ile Val Leu Asp Pro Leu Lys Ala Thr	
510 515 520	
cat gca gtt aaa ggt gtt aca gga cat gag gtc tgc aat tac ttt tgg	1754

His Ala Val Lys Gly Val Thr Gly His Glu Val Cys Asn Tyr Phe Trp	
525 530 535	
aat gtt gat gtt cgc aat gac tgg gaa act act ata gaa aac ttt cat	1802
Asn Val Asp Val Arg Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe His	
540 545 550 555	
gtg gtg gaa aca tta gct gat aat gca atc atc gtt tat caa acg cac	1850
Val Val Glu Thr Leu Ala Asp Asn Ala Ile Ile Val Tyr Gln Thr His	
560 565 570	
aag aga gta tgg ccc gct tct cag aga gac gta ctg tat ctt tct gct	1898
Lys Arg Val Trp Pro Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser Ala	
575 580 585	
att cga aag atc cca gcc ttg act gaa aat gac cct gaa act tgg ata	1946
Ile Arg Lys Ile Pro Ala Leu Thr Glu Asn Asp Pro Glu Thr Trp Ile	
590 595 600	
gtt tgt aat ttt tct gtg gat cat gat agt gct cct ctg aac aat cga	1994
Val Cys Asn Phe Ser Val Asp His Asp Ser Ala Pro Leu Asn Asn Arg	
605 610 615	
tgt gtc cgt gcc aaa atc aat att gct atg att tgt caa act tta gta	2042
Cys Val Arg Ala Lys Ile Asn Ile Ala Met Ile Cys Gln Thr Leu Val	
620 625 630 635	
agc cca cca gag gga gac cag gag ata agc aga gac aac att ctg tgc	2090
Ser Pro Pro Glu Gly Asp Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys	
640 645 650	
aag atc acg tat gta gct aat gtg aac cca gga gga tgg gcg cca gct	2138
Lys Ile Thr Tyr Val Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala	
655 660 665	
tcg gtc tta aga gca gtg gca aag cga gaa tac cct aag ttt cta aaa	2186
Ser Val Leu Arg Ala Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys	
670 675 680	
cgt ttt act tct tat gtc caa gaa aaa act gca gga aaa cca att ttg	2234
Arg Phe Thr Ser Tyr Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu	
685 690 695	
ttt tag tattaacagt gactgaagca aggctgcgtg acgttccatg ttggagaaag	2290
Phe	
700	
gagggaaaaa ataaaaagaa tcctctaagc tggaacgtag gatctacagc cttgtctgtg	2350
gccaagaag aaacattgca atcgtaaagc tgggtatcca gcactagcca tctcctgcta	2410
ggcctcctcg ctcagcgtgt aactataaat acatgtagaa tcacatggat atggctatat	2470
ttttatgtgc ttgctccttg gagtgaaaac aaataacttt gaattacaac taggaattaa	2530
ccgatgcttt aattttgagg aactttttca gaatttttta tttaccatgg tccagcctaa	2590

gatcctcagt tgtatcaggt tttgtgcaca aaagaaaagc acaaaagttg aacgcacctg 2650

aggcatgtgc tctctgtgca ccaaatactc ag 2682

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<211> 700

<212> PRT

<213> Mus musculus

<400> 96

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Gly Val Thr Ala Thr Ala Ala Asp Gly Trp Lys Gly Arg Leu Ser Ser
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Pro Leu Val Leu Leu Pro Arg Ser Ala Arg Cys Gln Ala Arg Arg Arg
35 40 45

Arg Arg Gly Gly Arg Ala Ser Ser Leu Phe Leu Phe Pro His Ser Pro
50 55 60

Glu Arg Ala Leu Leu Ala Val Pro Ser Pro Asp Pro Ser Pro Gln Gly
65 70 75 80

Leu Gly Ala Cys Thr Gly Ala Ala Arg Gly Ala Gly Ala Gly Leu Leu
85 90 95

Leu Gly Cys Arg Val Ser Met Ser Asp Asn Gln Ser Trp Asn Ser Ser
100 105 110

Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly Pro Pro Val Glu Arg
115 120 125

Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile His Gly Trp Gln Asp
130 135 140

Arg Trp Val Val Leu Lys Asn Asn Thr Leu Ser Tyr Tyr Lys Ser Glu
145 150 155 160

Asp Glu Thr Glu Tyr Gly Cys Arg Gly Ser Ile Cys Leu Ser Lys Ala
165 170 175

Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg Phe Asp Ile Ser Val

180

185

190

Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp Pro Glu His Arg Gln
195 200 205

Gln Trp Val Asp Ala Ile Glu Gln His Lys Thr Glu Ser Gly Tyr Gly
210 215 220

Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met Val Ser Leu Val Ser
225 230 235 240

Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser Ser Phe Lys Lys Gly
245 250 255

His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu Thr Phe Arg Asp Ile
260 265 270

Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Tyr Phe Asp Val Cys Ala
275 280 285

Asp Ala Val Ser Lys Asp Glu Leu Gln Arg Asp Lys Val Val Glu Asp
290 295 300

Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp Gly Asp Phe Leu His
305 310 315 320

Asn Thr Asn Gly Asn Lys Glu Lys Leu Phe Pro His Val Thr Pro Lys
325 330 335

Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala Ile Thr Phe Lys Ala
340 345 350

Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu Met
355 360 365

Val Lys Arg Glu Glu Ser Trp Gln Lys Arg His Asp Arg Glu Val Glu
370 375 380

Lys Arg Arg Arg Val Glu Glu Ala Tyr Lys Asn Val Met Glu Glu Leu
385 390 395 400

Lys Lys Lys Pro Arg Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro Asn
405 410 415

Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala Leu
420 425 430

Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val Arg
435 440 445

Leu His Trp Pro Thr Ser Leu Pro Ser Gly Asp Thr Phe Ser Ser Val
450 455 460

Gly Thr His Arg Phe Val Gln Lys Val Glu Glu Met Val Gln Asn His
465 470 475 480

Met Asn Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala Asn Trp Gln Leu
485 490 495

Val Val Glu Glu Gly Glu Met Lys Val Tyr Arg Arg Glu Val Glu Glu
500 505 510

Asn Gly Ile Val Leu Asp Pro Leu Lys Ala Thr His Ala Val Lys Gly
515 520 525

Val Thr Gly His Glu Val Cys Asn Tyr Phe Trp Asn Val Asp Val Arg
530 535 540

Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe His Val Val Glu Thr Leu
545 550 555 560

Ala Asp Asn Ala Ile Ile Val Tyr Gln Thr His Lys Arg Val Trp Pro
565 570 575

Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser Ala Ile Arg Lys Ile Pro
580 585 590

Ala Leu Thr Glu Asn Asp Pro Glu Thr Trp Ile Val Cys Asn Phe Ser
595 600 605

Val Asp His Asp Ser Ala Pro Leu Asn Asn Arg Cys Val Arg Ala Lys
610 615 620

~~Ile~~ Asn Ile Ala Met ~~Ile~~-Cys Gln Thr Leu Val Ser Pro Pro Glu Gly
625 630 635 640

Asp Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val
645 650 655

Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val Leu Arg Ala
660 665 670

Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys Arg Phe Thr Ser Tyr
675 680 685

Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe
690 695 700

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<212> DNA
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Leu Ala Ser Arg
1

ggg cca aat tcg ggc ggc ggc gcc ggg cgc agc gca ggg gtc aca acg 162
Gly Pro Asn Ser Gly Gly Gly Ala Gly Arg Ser Ala Gly Val Thr Thr
5 10 15 20

acg gcg acg gct gac ggt tgg aag ggc agg ctt cct tcg ccc ctc gac 210
Thr Ala Thr Ala Asp Gly Trp Lys Gly Arg Leu Pro Ser Pro Leu Asp
25 30 35

ctc ctt ccc cgg tcc gct tgg tgt cag gcg cgg cgg cgg cgg cgg cgg 258
Leu Leu Pro Arg Ser Ala Trp Cys Gln Ala Arg Arg Arg Arg Arg Arg
40 45 50

cgg cgc ggc ggg cgg act cca tcc ctc ctc ccg ctc cct cct gca ccg 306
Arg Arg Gly Gly Arg Thr Pro Ser Leu Leu Pro Leu Pro Pro Ala Pro
55 60 65

gag cgg gca ctc ctt cct tcg cca tcc ccc gac cct tca ccc cgg gga 354
Glu Arg Ala Leu Leu Pro Ser Pro Ser Pro Asp Pro Ser Pro Arg Gly
70 75 80

ctg ggc gcc tcc acc ggc gca gct cag gga gcg ggg gcc ggt ctc ctg 402
Leu Gly Ala Ser Thr Gly Ala Ala Gln Gly Ala Gly Ala Gly Leu Leu
85 90 95 100

ctc ggc tgt cgc gcc tcc atg tcg gat aac cag agc tgg aac tcg tcg Leu Gly Cys Arg Ala Ser Met Ser Asp Asn Gln Ser Trp Asn Ser Ser 105 110 115	450
ggc tcg gag gag gat ccg gag acg gag tcc ggg ccg ccg gtg gag cgc Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly Pro Pro Val Glu Arg 120 125 130	498
tgc gga gtc ctc agc aag tgg aca aac tat att cat ggg tgg cag gat Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile His Gly Trp Gln Asp 135 140 145	546
cgc tgg gta gtt ttg aaa aat aac act ctg agt tac tac aaa tct gaa Arg Trp Val Val Leu Lys Asn Asn Thr Leu Ser Tyr Tyr Lys Ser Glu 150 155 160	594
gat gag aca gag tat ggc tgc aga gga tcc atc tgt ctt agc aag gct Asp Glu Thr Glu Tyr Gly Cys Arg Gly Ser Ile Cys Leu Ser Lys Ala 165 170 175 180	642
gtc atc acg cct cat gat ttt gat gaa tgc cga ttt gat att agt gta Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg Phe Asp Ile Ser Val 185 190 195	690
aat gat agt gtt tgg tat ctt cgt gct caa gat cca gat cac aga cag Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp Pro Asp His Arg Gln 200 205 210	738
cag tgg ata gat gcc att gaa cag cac aag act gaa tct gga tat gga Gln Trp Ile Asp Ala Ile Glu Gln His Lys Thr Glu Ser Gly Tyr Gly 215 220 225	786
tct gaa tcc agc ttg cgt cga cat ggc tcc atg gta tca ttg gta tcc Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met Val Ser Leu Val Ser 230 235 240	834
gga gca agt ggc tat tct gca aca tcc acc tcc tca ttc aag aag ggc Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser Ser Phe Lys Lys Gly 245 250 255 260	882
cac agt tta cgt gag aaa ctg gct gaa atg gaa acc ttt aga gat ata His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu Thr Phe Arg Asp Ile 265 270 275	930
ctg tgt aga caa gtt gat acc cta cag aag ttc ttt gat gcc tgt gct Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Phe Phe Asp Ala Cys Ala 280 285 290	978
gat gct gtc tcc aag gat gaa ttt caa agg gat aaa gtg gta gaa gat Asp Ala Val Ser Lys Asp Glu Phe Gln Arg Asp Lys Val Val Glu Asp 295 300 305	1026
gat gaa gat gac ttt cct acg aca cgt tct gat gga gac ttc ttg cat Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp Gly Asp Phe Leu His 310 315 320	1074

aat acc aat ggc aat aag gaa aag gta ttt cca cat gta aca cca aaa Asn Thr Asn Gly Asn Lys Glu Lys Val Phe Pro His Val Thr Pro Lys 325 330 335 340	1122
gga att aat ggt ata gac ttt aaa ggt gag gcg ata act ttt aaa gca Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala Ile Thr Phe Lys Ala 345 350 355	1170
act act gcc gga atc ctt gct aca ctt tct cat tgt att gag ctg atg Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu Met 360 365 370	1218
gta aaa cgt gag gac agc tgg caa aag aga atg gac aag gaa act gag Val Lys Arg Glu Asp Ser Trp Gln Lys Arg Met Asp Lys Glu Thr Glu 375 380 385	1266
aag aga aga aga gtg gag gaa gca tac aaa aat gcc atg aca gaa ctt Lys Arg Arg Arg Val Glu Glu Ala Tyr Lys Asn Ala Met Thr Glu Leu 390 395 400	1314
aag aaa aaa tcc cac ttt gga gga cca gat tat gag gaa ggc cca aac Lys Lys Lys Ser His Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro Asn 405 410 415 420	1362
agt ttg att aat gaa gag gag ttc ttt gat gct gtt gaa gct gct ctt Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala Leu 425 430 435	1410
gac aga caa gat aaa ata gaa gaa cag tcg cag agt gaa aag gtc agg Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val Arg 440 445 450	1458
tta cat tgg tct act tca atg cca tct gga gat gcc ttt tct tet gtg Leu His Trp Ser Thr Ser Met Pro Ser Gly Asp Ala Phe Ser Ser Val 455 460 465	1506
ggg act cat aga ttt gtc caa aag ccc tat agt cgc tct tcc tcc atg Gly Thr His Arg Phe Val Gln Lys Pro Tyr Ser Arg Ser Ser Ser Met 470 475 480	1554
tct tcc att gat cta gtc agt gcc tct gac ggt gtt cac aga ttc agc Ser Ser Ile Asp Leu Val Ser Ala Ser Asp Gly Val His Arg Phe Ser 485 490 495 500	1602
tcc cag gtt gaa gag atg gtg cag aac cac atg acc tat tca ttg cag Ser Gln Val Glu Glu Met Val Gln Asn His Met Thr Tyr Ser Leu Gln 505 510 515	1650
gat gta ggt ggg gac gcc aac tgg cag ttg gtt gta gaa gaa ggg gag Asp Val Gly Gly Asp Ala Asn Trp Gln Leu Val Val Glu Glu Gly Glu 520 525 530	1698
atg aag gta tat aga aga gaa gta gaa gaa aat ggg att gtt ctg gat Met Lys Val Tyr Arg Arg Glu Val Glu Glu Asn Gly Ile Val Leu Asp 535 540 545	1746
cct ttg aaa gct acc cat gca gtt aaa ggc gtt aca gga cac gag gtc	1794

Pro	Leu	Lys	Ala	Thr	His	Ala	Val	Lys	Gly	Val	Thr	Gly	His	Glu	Val		
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tgc	aat	tac	ttc	tgg	aat	gtt	gat	gtt	cgc	aat	gat	tgg	gaa	aca	act	1842	
Cys	Asn	Tyr	Phe	Trp	Asn	Val	Asp	Val	Arg	Asn	Asp	Trp	Glu	Thr	Thr		
565					570				575						580		
ata	gaa	aac	ttt	cat	gtg	gtg	gaa	aca	tta	gct	gat	aat	gca	atc	atc	1890	
Ile	Glu	Asn	Phe	His	Val	Val	Glu	Thr	Leu	Ala	Asp	Asn	Ala	Ile	Ile		
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att	tat	caa	acg	cac	aag	aga	gtg	tgg	cca	gcc	tct	cag	cgg	gat	gtc	1938	
Ile	Tyr	Gln	Thr	His	Lys	Arg	Val	Trp	Pro	Ala	Ser	Gln	Arg	Asp	Val		
			600					605					610				
tta	tat	ctg	tct	gcc	att	cga	aag	ata	cca	gct	ttg	aat	gaa	aat	gac	1986	
Leu	Tyr	Leu	Ser	Ala	Ile	Arg	Lys	Ile	Pro	Ala	Leu	Asn	Glu	Asn	Asp		
		615					620					625					
ccg	gag	act	tgg	ata	gtt	tgt	aat	ttt	tct	gta	gat	cac	agc	agt	gct	2034	
Pro	Glu	Thr	Trp	Ile	Val	Cys	Asn	Phe	Ser	Val	Asp	His	Ser	Ser	Ala		
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cct	cta	aac	aat	cga	tgt	gtc	cgt	gcc	aaa	ata	aac	gtt	gct	atg	att	2082	
Pro	Leu	Asn	Asn	Arg	Cys	Val	Arg	Ala	Lys	Ile	Asn	Val	Ala	Met	Ile		
645					650					655				660			
tgt	cag	acc	ttg	gtg	agc	ccc	cca	gag	gga	aac	cag	gag	att	agc	agg	2130	
Cys	Gln	Thr	Leu	Val	Ser	Pro	Pro	Glu	Gly	Asn	Gln	Glu	Ile	Ser	Arg		
				665						670				675			
gac	aac	att	cta	tgc	aag	att	aca	tac	gtg	gcc	aat	gta	aac	cct	gga	2178	
Asp	Asn	Ile	Leu	Cys	Lys	Ile	Thr	Tyr	Val	Ala	Asn	Val	Asn	Pro	Gly		
			680					685					690				
gga	tgg	gcc	cca	gcc	tca	gtg	tta	cgg	gca	gtg	gca	aag	cga	gaa	tat	2226	
Gly	Trp	Ala	Pro	Ala	Ser	Val	Leu	Arg	Ala	Val	Ala	Lys	Arg	Glu	Tyr		
		695					700					705					
cca	aag	ttt	cta	aag	cgt	ttt	act	tct	tac	gta	caa	gaa	aaa	act	gca	2274	
Pro	Lys	Phe	Leu	Lys	Arg	Phe	Thr	Ser	Tyr	Val	Gln	Glu	Lys	Thr	Ala		
	710					715					720						
gga	aaa	cct	att	ttg	ttc	tag	tattaacagt	gactgaagca	aggctgtgtg							2325	
Gly	Lys	Pro	Ile	Leu	Phe												
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 <212> PRT
 <213> Bos taurus

 <400> 98

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35 40 45

Arg Arg Arg Arg Arg Arg Gly Gly Arg Thr Pro Ser Leu Leu Pro Leu
50 55 60

Pro Pro Ala Pro Glu Arg Ala Leu Leu Pro Ser Pro Ser Pro Asp Pro
65 70 75 80

Ser Pro Arg Gly Leu Gly Ala Ser Thr Gly Ala Ala Gln Gly Ala Gly
85 90 95

Ala Gly Leu Leu Leu Gly Cys Arg Ala Ser Met Ser Asp Asn Gln Ser
100 105 110

Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly Pro
115 120 125

Pro Val Glu Arg Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile His
130 135 140

Gly Trp Gln Asp Arg Trp Val Val Leu Lys Asn Asn Thr Leu Ser Tyr
145 150 155 160

Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly Cys Arg Gly Ser Ile Cys
165 170 175

Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg Phe
180 185 190

Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp Pro
195 200 205

Asp His Arg Gln Gln Trp Ile Asp Ala Ile Glu Gln His Lys Thr Glu
210 215 220

Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met Val

225

230

235

240

Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser Ser
 245 250 255

Phe Lys Lys Gly His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu Thr
 260 265 270

Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Phe Phe
 275 280 285

Asp Ala Cys Ala Asp Ala Val Ser Lys Asp Glu Phe Gln Arg Asp Lys
 290 295 300

Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp Gly
 305 310 315 320

Asp Phe Leu His Asn Thr Asn Gly Asn Lys Glu Lys Val Phe Pro His
 325 330 335

Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala Ile
 340 345 350

Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys
 355 360 365

Ile Glu Leu Met Val Lys Arg Glu Asp Ser Trp Gln Lys Arg Met Asp
 370 375 380

Lys Glu Thr Glu Lys Arg Arg Arg Val Glu Glu Ala Tyr Lys Asn Ala
 385 390 395 400

Met Thr Glu Leu Lys Lys Lys Ser His Phe Gly Gly Pro Asp Tyr Glu
 405 410 415

Glu Gly Pro Asn Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val
 420 425 430

Glu Ala Ala Leu Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser
 435 440 445

Glu Lys Val Arg Leu His Trp Ser Thr Ser Met Pro Ser Gly Asp Ala
 450 455 460

Phe Ser Ser Val Gly Thr His Arg Phe Val Gln Lys Pro Tyr Ser Arg
465 470 475 480

Ser Ser Ser Met Ser Ser Ile Asp Leu Val Ser Ala Ser Asp Gly Val
485 490 495

His Arg Phe Ser Ser Gln Val Glu Glu Met Val Gln Asn His Met Thr
500 505 510

Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala Asn Trp Gln Leu Val Val
515 520 525

Glu Glu Gly Glu Met Lys Val Tyr Arg Arg Glu Val Glu Glu Asn Gly
530 535 540

Ile Val Leu Asp Pro Leu Lys Ala Thr His Ala Val Lys Gly Val Thr
545 550 555 560

Gly His Glu Val Cys Asn Tyr Phe Trp Asn Val Asp Val Arg Asn Asp
565 570 575

Trp Glu Thr Thr Ile Glu Asn Phe His Val Val Glu Thr Leu Ala Asp
580 585 590

Asn Ala Ile Ile Ile Tyr Gln Thr His Lys Arg Val Trp Pro Ala Ser
595 600 605

Gln Arg Asp Val Leu Tyr Leu Ser Ala Ile Arg Lys Ile Pro Ala Leu
610 615 620

Asn Glu Asn Asp Pro Glu Thr Trp Ile Val Cys Asn Phe Ser Val Asp
625 630 635 640

His Ser Ser Ala Pro Leu Asn Asn Arg Cys Val Arg Ala Lys Ile Asn
645 650 655

Val Ala Met Ile Cys Gln Thr Leu Val Ser Pro Pro Glu Gly Asn Gln
660 665 670

Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val Ala Asn
675 680 685

Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val Leu Arg Ala Val Ala
690 695 700

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Leu Ala Ser Arg
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Gly Pro Asn Ser Gly Gly Gly Ala Gly Arg Ser Ala Gly Val Thr Thr
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Thr Ala Thr Ala Asp Gly Trp Lys Gly Arg Leu Pro Ser Pro Leu Asp
25 30 35
ctc ctt ccc cgg tcc gct tgg tgt cag gcg cgg cgg cgg cgg cgg cgg 258
Leu Leu Pro Arg Ser Ala Trp Cys Gln Ala Arg Arg Arg Arg Arg Arg
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cgg cgc ggc ggc cgg act cca tcc ctc ctc ccg ctc cct cct gca ccg 306
Arg Arg Gly Gly Arg Thr Pro Ser Leu Leu Pro Leu Pro Pro Ala Pro
55 60 65
gag cgg gca ctc ctt cct tcg cca tcc ccc gac cct tca ccc cgg gga 354
Glu Arg Ala Leu Leu Pro Ser Pro Ser Pro Asp Pro Ser Pro Arg Gly
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ctg ggc gcc tcc acc ggc gca gct cag gga gcg ggc gcc ggt ctc ctg 402
Leu Gly Ala Ser Thr Gly Ala Ala Gln Gly Ala Gly Ala Gly Leu Leu
85 90 95 100
ctc ggc tgt cgc gcc tcc atg tcg gat aac cag agc tgg aac tcg tcg 450
Leu Gly Cys Arg Ala Ser Met Ser Asp Asn Gln Ser Trp Asn Ser Ser
105 110 115

ggc tcg gag gag gat ccg gag acg gag tcc ggg ccg ccg gtg gag cgc Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly Pro Pro Val Glu Arg 120 125 130	498
tgc gga gtc ctc agc aag tgg aca aac tat att cat ggg tgg cag gat Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile His Gly Trp Gln Asp 135 140 145	546
cgc tgg gta gtt ttg aaa aat aac act ctg agt tac tac aaa tct gaa Arg Trp Val Val Leu Lys Asn Asn Thr Leu Ser Tyr Tyr Lys Ser Glu 150 155 160	594
gat gag aca gag tat ggc tgc aga gga tcc atc tgt ctt agc aag gct Asp Glu Thr Glu Tyr Gly Cys Arg Gly Ser Ile Cys Leu Ser Lys Ala 165 170 175 180	642
gtc atc acg cct cat gat ttt gat gaa tgc cga ttt gat att agt gta Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg Phe Asp Ile Ser Val 185 190 195	690
aat gat agt gtt tgg tat ctt cgt gct caa gat cca gat cac aga cag Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp Pro Asp His Arg Gln 200 205 210	738
cag tgg ata gat gcc att gaa cag cac aag act gaa tct gga tat gga Gln Trp Ile Asp Ala Ile Glu Gln His Lys Thr Glu Ser Gly Tyr Gly 215 220 225	786
tct gaa tcc agc ttg cgt cga cat ggc tcc atg gta tca ttg gta tcc Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met Val Ser Leu Val Ser 230 235 240	834
gga gca agt ggc tat tct gca aca tcc acc tcc tca ttc aag aag ggc Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser Ser Phe Lys Lys Gly 245 250 255 260	882
cac agt tta cgt gag aaa ctg gct gaa atg gaa acc ttt aga gat ata His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu Thr Phe Arg Asp Ile 265 270 275	930
ctg tgt aga caa gtt gat acc cta cag aag ttc ttt gat gcc tgt gct Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Phe Phe Asp Ala Cys Ala 280 285 290	978
gat gct gtc tcc aag gat gaa ttt caa agg gat aaa gtg gta gaa gat Asp Ala Val Ser Lys Asp Glu Phe Gln Arg Asp Lys Val Val Glu Asp 295 300 305	1026
gat gaa gat gac ttt cct acg aca cgt tct gat gga gac ttc ttg cat Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp Gly Asp Phe Leu His 310 315 320	1074
aat acc aat ggc aat aag gaa aag gta ttt cca cat gta aca cca aaa Asn Thr Asn Gly Asn Lys Glu Lys Val Phe Pro His Val Thr Pro Lys 325 330 335 340	1122

gga att aat ggt ata gac ttt aaa ggt gag gcg ata act ttt aaa gca Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala Ile Thr Phe Lys Ala 345 350 355	1170
act act gcc gga atc ctt gct aca ctt tct cat tgt att gag ctg atg Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys Ile Glu Leu Met 360 365 370	1218
gta aaa cgt gag gac agc tgg caa aag aga atg gac aag gaa act gag Val Lys Arg Glu Asp Ser Trp Gln Lys Arg Met Asp Lys Glu Thr Glu 375 380 385	1266
aag aga aga aga gtg gag gaa gca tac aaa aat gcc atg aca gaa ctt Lys Arg Arg Arg Val Glu Glu Ala Tyr Lys Asn Ala Met Thr Glu Leu 390 395 400	1314
aag aaa aaa tcc cac ttt gga gga cca gat tat gag gaa ggc cca aac Lys Lys Lys Ser His Phe Gly Gly Pro Asp Tyr Glu Glu Gly Pro Asn 405 410 415 420	1362
agt ttg att aat gaa gag gag ttc ttt gat gct gtt gaa gct gct ctt Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val Glu Ala Ala Leu 425 430 435	1410
gac aga caa gat aaa ata gaa gaa cag tcg cag agt gaa aag gtc agg Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser Glu Lys Val Arg 440 445 450	1458
tta cat tgg tct act tca atg cca tct gga gat gcc ttt tct tct gtg Leu His Trp Ser Thr Ser Met Pro Ser Gly Asp Ala Phe Ser Ser Val 455 460 465	1506
ggg act cat aga ttt gtc caa aag gtt gaa gag atg gtg cag aac cac Gly Thr His Arg Phe Val Gln Lys Val Glu Glu Met Val Gln Asn His 470 475 480	1554
atg acc tat tca ttg cag gat gta ggt ggg gac gcc aac tgg cag ttg Met Thr Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala Asn Trp Gln Leu 485 490 495 500	1602
gtt gta gaa gaa ggg gag atg aag gta tat aga aga gaa gta gaa gaa Val Val Glu Glu Gly Glu Met Lys Val Tyr Arg Arg Glu Val Glu Glu 505 510 515	1650
aat ggg att gtt ctg gat cct ttg aaa gct acc cat gca gtt aaa ggc Asn Gly Ile Val Leu Asp Pro Leu Lys Ala Thr His Ala Val Lys Gly 520 525 530	1698
gtt aca gga cac gag gtc tgc aat tac ttc tgg aat gtt gat gtt cgc Val Thr Gly His Glu Val Cys Asn Tyr Phe Trp Asn Val Asp Val Arg 535 540 545	1746
aat gat tgg gaa aca act ata gaa aac ttt cat gtg gtg gaa aca tta Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe His Val Val Glu Thr Leu 550 555 560	1794
gct gat aat gca atc atc att tat caa acg cac aag aga gtg tgg cca	1842

Ala Asp Asn Ala Ile Ile Ile Tyr Gln Thr His Lys Arg Val Trp Pro
565 570 575 580

gcc tct cag cgg gat gtc tta tat ctg tct gcc att cga aag ata cca 1890
Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser Ala Ile Arg Lys Ile Pro
585 590 595

gct ttg aat gaa aat gac ccg gag act tgg ata gtt tgt aat ttt tct 1938
Ala Leu Asn Glu Asn Asp Pro Glu Thr Trp Ile Val Cys Asn Phe Ser
600 605 610

gta gat cac agc agt gct cct cta aac aat cga tgt gtc cgt gcc aaa 1986
Val Asp His Ser Ser Ala Pro Leu Asn Asn Arg Cys Val Arg Ala Lys
615 620 625

ata aac gtt gct atg att tgt cag acc ttg gtg agc ccc cca gag gga 2034
Ile Asn Val Ala Met Ile Cys Gln Thr Leu Val Ser Pro Pro Glu Gly
630 635 640

aac cag gag att agc agg gac aac att cta tgc aag att aca tac gtg 2082
Asn Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys Ile Thr Tyr Val
645 650 655 660

gcc aat gta aac cct gga gga tgg gcc cca gcc tca gtg tta cgg gca 2130
Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser Val Leu Arg Ala
665 670 675

gtg gca aag cga gaa tat cca aag ttt cta aag cgt ttt act tct tac 2178
Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys Arg Phe Thr Ser Tyr
680 685 690

gta caa gaa aaa act gca gga aaa cct att ttg ttc tag tattaacagt 2227
Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe
695 700

gactgaagca aggctgtgtg acattccatg ttggaggaaa aaaaaaaaaa aaaaaa 2283

<210> 100
<211> 704
<212> PRT
<213> Bos taurus

<400> 100

Leu Ala Ser Arg Gly Pro Asn Ser Gly Gly Gly Ala Gly Arg Ser Ala
1 5 10 15

Gly Val Thr Thr Thr Ala Thr Ala Asp Gly Trp Lys Gly Arg Leu Pro
20 25 30

Ser Pro Leu Asp Leu Leu Pro Arg Ser Ala Trp Cys Gln Ala Arg Arg
35 40 45

Arg Arg Arg Arg Arg Arg Gly Gly Arg Thr Pro Ser Leu Leu Pro Leu
50 55 60

Pro Pro Ala Pro Glu Arg Ala Leu Leu Pro Ser Pro Ser Pro Asp Pro
65 70 75 80

Ser Pro Arg Gly Leu Gly Ala Ser Thr Gly Ala Ala Gln Gly Ala Gly
85 90 95

Ala Gly Leu Leu Leu Gly Cys Arg Ala Ser Met Ser Asp Asn Gln Ser
100 105 110

Trp Asn Ser Ser Gly Ser Glu Glu Asp Pro Glu Thr Glu Ser Gly Pro
115 120 125

Pro Val Glu Arg Cys Gly Val Leu Ser Lys Trp Thr Asn Tyr Ile His
130 135 140

Gly Trp Gln Asp Arg Trp Val Val Leu Lys Asn Asn Thr Leu Ser Tyr
145 150 155 160

Tyr Lys Ser Glu Asp Glu Thr Glu Tyr Gly Cys Arg Gly Ser Ile Cys
165 170 175

Leu Ser Lys Ala Val Ile Thr Pro His Asp Phe Asp Glu Cys Arg Phe
180 185 190

Asp Ile Ser Val Asn Asp Ser Val Trp Tyr Leu Arg Ala Gln Asp Pro
195 200 205

Asp His Arg Gln Gln Trp Ile Asp Ala Ile Glu Gln His Lys Thr Glu
210 215 220

Ser Gly Tyr Gly Ser Glu Ser Ser Leu Arg Arg His Gly Ser Met Val
225 230 235 240

Ser Leu Val Ser Gly Ala Ser Gly Tyr Ser Ala Thr Ser Thr Ser Ser
245 250 255

Phe Lys Lys Gly His Ser Leu Arg Glu Lys Leu Ala Glu Met Glu Thr
260 265 270

Phe Arg Asp Ile Leu Cys Arg Gln Val Asp Thr Leu Gln Lys Phe Phe

275

280

285

Asp Ala Cys Ala Asp Ala Val Ser Lys Asp Glu Phe Gln Arg Asp Lys
290 295 300

Val Val Glu Asp Asp Glu Asp Asp Phe Pro Thr Thr Arg Ser Asp Gly
305 310 315 320

Asp Phe Leu His Asn Thr Asn Gly Asn Lys Glu Lys Val Phe Pro His
325 330 335

Val Thr Pro Lys Gly Ile Asn Gly Ile Asp Phe Lys Gly Glu Ala Ile
340 345 350

Thr Phe Lys Ala Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys
355 360 365

Ile Glu Leu Met Val Lys Arg Glu Asp Ser Trp Gln Lys Arg Met Asp
370 375 380

Lys Glu Thr Glu Lys Arg Arg Arg Val Glu Glu Ala Tyr Lys Asn Ala
385 390 395 400

Met Thr Glu Leu Lys Lys Lys Ser His Phe Gly Gly Pro Asp Tyr Glu
405 410 415

Glu Gly Pro Asn Ser Leu Ile Asn Glu Glu Glu Phe Phe Asp Ala Val
420 425 430

Glu Ala Ala Leu Asp Arg Gln Asp Lys Ile Glu Glu Gln Ser Gln Ser
435 440 445

Glu Lys Val Arg Leu His Trp Ser Thr Ser Met Pro Ser Gly Asp Ala
450 455 460

Phe Ser Ser Val Gly Thr His Arg Phe Val Gln Lys Val Glu Glu Met
465 470 475 480

Val Gln Asn His Met Thr Tyr Ser Leu Gln Asp Val Gly Gly Asp Ala
485 490 495

Asn Trp Gln Leu Val Val Glu Glu Gly Glu Met Lys Val Tyr Arg Arg
500 505 510

Glu Val Glu Glu Asn Gly Ile Val Leu Asp Pro Leu Lys Ala Thr His
515 520 525

Ala Val Lys Gly Val Thr Gly His Glu Val Cys Asn Tyr Phe Trp Asn
530 535 540

Val Asp Val Arg Asn Asp Trp Glu Thr Thr Ile Glu Asn Phe His Val
545 550 555 560

Val Glu Thr Leu Ala Asp Asn Ala Ile Ile Ile Tyr Gln Thr His Lys
565 570 575

Arg Val Trp Pro Ala Ser Gln Arg Asp Val Leu Tyr Leu Ser Ala Ile
580 585 590

Arg Lys Ile Pro Ala Leu Asn Glu Asn Asp Pro Glu Thr Trp Ile Val
595 600 605

Cys Asn Phe Ser Val Asp His Ser Ser Ala Pro Leu Asn Asn Arg Cys
610 615 620

Val Arg Ala Lys Ile Asn Val Ala Met Ile Cys Gln Thr Leu Val Ser
625 630 635 640

Pro Pro Glu Gly Asn Gln Glu Ile Ser Arg Asp Asn Ile Leu Cys Lys
645 650 655

Ile Thr Tyr Val Ala Asn Val Asn Pro Gly Gly Trp Ala Pro Ala Ser
660 665 670

Val Leu Arg Ala Val Ala Lys Arg Glu Tyr Pro Lys Phe Leu Lys Arg
675 680 685

Phe Thr Ser Tyr Val Gln Glu Lys Thr Ala Gly Lys Pro Ile Leu Phe
690 695 700

<210> 101

<211> 13

<212> PRT

<213> Mus musculus

<400> 101

Gly Ala Gly Ala Gly Leu Leu Leu Gly Arg Cys Val Ser
1 5 10

<210> 102
<211> 171
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 102

Met Ala Ser Gln Lys Arg Pro Ser Gln Arg His Gly Ser Lys Tyr Leu
1 5 10 15

Ala Thr Ala Ser Thr Met Asp His Ala Arg His Gly Phe Leu Pro Arg
20 25 30

His Arg Asp Thr Gly Ile Leu Asp Ser Ile Gly Arg Phe Phe Gly Gly
35 40 45

Asp Arg Gly Ala Pro Lys Arg Gly Ser Gly Lys Asp Ser His His Pro
50 55 60

Ala Arg Thr Ala His Tyr Gly Ser Leu Pro Gln Lys Ser His Gly Arg
65 70 75 80

Thr Gln Asp Glu Asn Pro Val Val His Phe Phe Lys Asn Ile Val Thr
85 90 95

Pro Arg Thr Pro Pro Pro Ser Gln Gly Lys Gly Arg Gly Leu Ser Leu
100 105 110

Ser Arg Phe Ser Trp Gly Ala Glu Gly Gln Arg Pro Gly Phe Gly Tyr
115 120 125

Gly Gly Arg Ala Ser Asp Tyr Lys Ser Ala His Lys Gly Phe Lys Gly
130 135 140

Val Asp Ala Gln Gly Thr Leu Ser Lys Ile Phe Lys Leu Gly Gly Arg
145 150 155 160

Asp Ser Arg Ser Gly Ser Pro Met Ala Arg Arg
165 170

<210> 103
<211> 18
<212> PRT
<213> artificial

<220>
<223> Synthetic

<400> 103

Pro Arg Ser Ala Arg Cys Gln Ala Arg Arg Arg Gly Gly Arg Thr
1 5 10 15

Ser Ser

<210> 104
<211> 25
<212> PRT
<213> Artificial

<220>
<223> synthetic

<220>
<221> MISC_FEATURE
<222> (1)..(10)
<223> Any of amino acids 1-10 may be optionally present, providing the
remaining sequence is contiguous from residue 11 in the
direction of the N-terminus

<220>
<221> MISC_FEATURE
<222> (15)..(15)
<223> X is Glu or Gln

<220>
<221> MISC_FEATURE
<222> (16)..(25)
<223> Any of amino acids 16-25 may be optionally present, providing the
remaining sequence is contiguous from residue 15 in the
direction of the C-terminus

<400> 104

Ala Thr Thr Ala Gly Ile Leu Ala Thr Leu Ser His Cys Ile Xaa Leu
1 5 10 15

Met Val Lys Arg Glu Asp Ser Trp Gln
20 25

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